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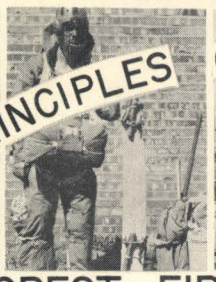
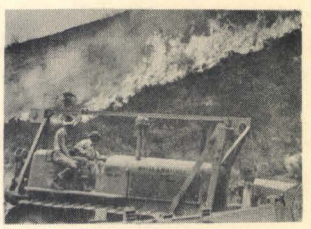


PRINCIPLES OF ORGANIZATION FOR FOREST FIRE SUPPRESSION



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CONTENTS

	Page
FOREWORD	i
A. SUPPRESSION POLICY	1
B. ORGANIZATION AND MANAGEMENT OF FIRE SUPPRESSION OPERATIONS	1
C. PRIMARY FUNCTIONS IN THE CONTROL OF FIRES AND APPLICABLE PRINCIPLES	2-9
a. The Plans Function	2-5
1. Policy	
2. Gather and Compile all Facts	
(a) Physical Conditions Associated with the Fire Operation	
(b) Weather Conditions	
(c) Records, Maps and Statistics	
3. Analysis of Facts	
4. Planning	
5. Demobilization	
6. Major Plans Decisions the Responsibility of the Fire Boss	
b. The Service Function	5-6
1. Men	
2. Camp Management	
3. Timekeeping	
4. Transportation and other Equipment	
5. Communication	
6. Procurement and Safe Distribution	
7. First Aid and Care for the Sick and Injured	
8. Demobilization	

	Page
c. The Line Function	6-7
d. The Command Function	7-9
1. Policy	
2. Making Assignments	
3. Unity of Command	
4. Delegation of Authority	
5. Avoid Over Staffing	
6. Execution	
(a) Selection of Personnel	
(b) Placement of Best Qualified Men	
(c) Issuing Clear-cut Instructions	
(d) Provide Behind-the-Lines Organization	
(e) Managerial Head	
7. Employee Relations	
8. Safety and Training	
D. PLANNING THE FIRE ORGANIZATION	9-11
a. Factors Affecting the Fire Job Load	
b. Span of Control in Organizing for Fire Suppression Operations	
E. SUGGESTED FIRE CONTROL ORGANIZATIONS	11-33
a. Basic Organization Guides	11-28
1. The One Man Fire - The Two Man Fire	
2. The Small Suppression Crew Fire (6 line workers)	
3. The Medium Suppression Crew Fire (14 line workers)	

Page

4. The Large Crew Fire (21 line workers)

5. The Multiple Crew Fire (63 line workers)

6. The Two Sector Fire (126 line workers)

7. The Three Sector Fire (189 line workers)

8. The Two Division Fire (378 line workers)

9. The Multiple Division Fire (945 line workers)

10. The Coordinator Stage Fire

b. Specialized Equipment and the Fire Organization 28-30

c. The Fire Headquarters and its Relations with Line Service and Plans Units 31-32

d. "Behind-the-Lines" Requirements 32-33

F. ALTERNATES 34

G. SUMMARY 34-35

H. APPENDIX A-1-43

1. Job Descriptions

a. Fire Boss
b. Line Boss (Line Chief)
c. Division Boss
d. Sector Boss
e. Crew Boss (Foreman)
f. Straw Boss
g. Advance Line Locator
h. Line Scout
i. Cat or Plow Boss (Dozer or Plow Foreman)
j. Power Saw Boss (Power Saw Foreman)
k. Spotter
l. Tanker Boss (Tanker Foreman)
m. Service Chief
n. Equipment Officer (Equipment Boss)
o. Supply Officer (Supply Boss)
p. Communication Officer
q. Camp Boss
r. Air Officer (Air Operations Boss)
s. Cargo Boss (Cargo Officer)
t. Plans Chief (Plans Boss - Operations Officer)
u. Information Officer (Intelligence Officer - Scouting Boss)
v. General Scout
w. Maps and Records Officer
x. Aerial Photo Interpreter
y. Fire Safety Officer

FOREWORD

The need for sound management practices and good organization in forest fire suppression may be compared to that of the Military in time of war since in many respects the urgency and emergency character of the operations are similar. Extensive damage and large suppression expenditures may follow if the right things are not done at the right time and in the right manner. Forest fire suppression calls for an especially smooth working organization adequate to do the job efficiently and economically. There is little time for deliberation or correcting mistakes.

Organization and management in fire operations is made doubly complex and difficult because, unlike the Military which operates with highly trained forces, a fully trained force of fire fighters is not immediately available to most fire protection agencies to fight fires that have escaped initial attack. Hundreds of fire fighters, in many cases, must be recruited in a brief period of time from private industry, cities, towns and other sources. These men, usually, are not well trained in the art of fire fighting, are frequently unacquainted with the tools used to control a fire and often do not know how the fire organization operates.

It is necessary to orient these men, organize them into an effective fire fighting force, equip them, show them how to use tools, and have them on the fire line, often within an hour or two after they arrive at the headquarters fire camp or mobilization center. No other important job is accomplished in this manner.

The problems encountered in Management and Organization of untrained fire fighters, which is normal on most large fires, have been under study by the U.S. Forest Service for many years. As certain facets of such problems were resolved or improvements made the various U.S. Forest Service regions incorporated them in handbooks covering the subject of Organization for Forest Fire Suppression.

The interchange of fire supervisory personnel, others with special skills and highly organized labor crews between U.S. Forest Service regions has become an accepted practice during this age of rapid air transportation. This brought about the need for standardization of Forest Fire Suppression Organization and Practices.

This publication is intended to meet this need. It reflects the work of many men skilled in the art of forest fire suppression, and whose job it is to apply basic management principles in organizing men and machines for control operations.

A. FIRE SUPPRESSION POLICY

The suppression policy of the Forest Service is to require fast, energetic, and thorough suppression of all fires burning (a) on Forest Service lands, (b) on other intermingled or adjacent lands when such fires constitute a threat to Forest Service lands, or (c) on lands the protection of which is a contractual obligation of the Forest Service.

When first attack forces fail to obtain this, the policy then calls for prompt calculating of the problems of the existing situation and probabilities of spread, and organizing and activating adequate strength to control every such fire within the first work period. Failing in this effort, the attack each succeeding day will be planned and executed with the aim of obtaining control before ten o'clock the next morning.

Small fires that are not potentially damaging, such as fires that start in isolated small patches of vegetation, normally at high elevations, surrounded by granite sand, water, bare rock or soil, and which can burn only a few acres, with no danger of spreading or spotting to other fuels, even should adverse weather conditions develop are exempted from the foregoing policy.

(Above policy applies to wild fires only)

B. ORGANIZATION AND MANAGEMENT OF FIRE SUPPRESSION OPERATIONS

Organization, as herein used, is defined as the executive structure of a fire operation while management is defined as a judicious use of a means to accomplish an end. Organization and management go hand in hand. It is management's function to set up a competent and adequate organization to do a job, then to adjust it to meet changes in the behavior of the fire and the fire job load.

Once a fire escapes the initial attacking force a rapid reorientation of the fire suppression job is essential. This involves assigning a man competent to take charge of the more involved situation. It is his primary responsibility to see that the fire is suppressed according to the standards and time limits required. To accomplish this he must plan an organization based upon the principles that there must be definite channels of Command, clear-cut definition of duties and a positive distribution of these duties among the Command in concise, unmistakable language.

C. PRIMARY FUNCTIONS IN THE CONTROL OF FIRES AND APPLICABLE PRINCIPLES

All work in the control of forest fires may be divided into four broad functions. The number of individuals it may take to efficiently and effectively do the work characteristic of each function depends mainly upon the number of men and machines required for the fire suppression job, accessibility and behavior of the fire.

In brief the four major functions common to all except the "one man" fire are:

The Plans function, which is the collection and analysis of information pertaining to the fire and the development of this information into a detailed plan of operation for control purposes.

The Service function, which is the procurement, maintenance and physical distribution of men and machines at the time and place called for in the suppression plan.

The Line function, which is the safe, prompt and thorough execution of the control, mop-up and patrol plans prepared for the particular fire to be controlled.

The Command function, which is the knitting together and the coordinated management of the Plans, Service and Line functions in a manner that will assure the equipment and men on the fire are used and directed efficiently and adequately.

On fires with a light job load all upper level work of the foregoing functions may be performed by a Fire Boss and the individual in charge of the field fire headquarters. As the fire job load increases staff assistants and line overhead are progressively added to the organization to assure efficient use of men and equipment.

The four primary functions are more fully described in the following paragraphs:

a. The Plans Function

1. Policy - Know Policies, accept them and see that they are applied. It is essential that preliminary plans be made immediately after the fire escapes the initial

attacking force to provide time for control forces to arrive at the fire for effective work during the first work period. Adequate planning is also essential to assure adequate control forces are available for each succeeding work period until the fire is controlled.

2. Gather and Compile all Facts as follows:

(a) Physical Conditions Associated with the Fire Operation

Cover types and fuels in the immediate vicinity and beyond the fire area that will increase or decrease spread.

Current dryness of fuels, time of day and year.

Immediate slope, elevations and/or topographic characteristics within and beyond the fire area.

Barriers that will reduce spread or which can be used to hasten line construction.

Unsafe and dangerous conditions for men.

Status of control.

Current location of the limits of the fire and its probable location at future time intervals.

Accessibility as it applies to the general fire area and in detail for its various sectors.

Potential camp locations; water and in what amount and where.

Soil conditions.

Information on values -- both structural and natural in the fire area.

Types of equipment required for constructing and holding line.

Availability of management and supervisory personnel, line forces, specialists, equipment and facilitating gear.

Probable rate of line construction per unit of manpower or machine by sectors of planned fire perimeter to be worked.

(b) Weather Conditions

Information on weather is essential in the preparation of strategy plans for control of all fires; also essential for the selection of the most effective tactics to be employed. Where necessary this information must be available by major sectors of the fire. Data must be obtained on current and predicted wind velocity and direction; temperature and predicted changes; current and future relative humidity; current and forecasted fuel moisture.

(c) Records, Maps and Statistics

It is important to planning to compile all meteorological data, logistics and other information in the form of maps and statistics at the time specified to allow rapid clear-cut decisions on location of the fire at predetermined time intervals, on questions of strategy, tactics to be employed and the organization needed for control.

3. Analysis of Facts - Such an analysis involves definition of the problems, coordinating, correlating and calculating, preparatory to making up the plan for control; often to provide simultaneous coordinated action in several directions. To simplify procedure, two stage analysis is recommended:

   a. Proposed location of fire line.
   b. Facilities needed to construct and hold this line.

4. Planning - This function includes preparation of operation plans in homogeneous units and alternate plans where needed. It calls for information on extent of the job, priorities, sequences and time elements, and requires a current flow of information on the resources, services and facilities needed to execute the plan or alternate plans; and determination of the specific organization required to implement the plans. It involves development of a Communication Plan for the fire operation.

5. Demobilization - On most fire operations certain parts of the fire perimeter are controlled before others; for example the "rear" and "flanks" of a fire may be controlled before the "head." It is the responsibility of those in charge of the Plans function to keep current information on the status of control on all portions of the fire perimeter. As certain sectors of the fire

perimeter are brought under control it is the responsibility of the Plans Unit to correlate this information and prepare demobilization plans for review and approval by the Fire Boss as fire operations proceed making such action possible.

6. Major Plans Decisions the Responsibility of the Fire Boss - Details of the Plans work can be performed by others but in final analysis the Fire Boss must make the major Control Plan decisions and approve final organization plans for each shift on a fire or during interim periods when emergencies require such changes.

b. The Service Function

1. Men - Large numbers of men are required on many project fires. These men must receive proper care to be most efficient. Commissary such as tobacco and clothing may be needed; sanitation facilities must be provided, etc. Care of personal gear, particularly the gear brought in by men from other forests or regions is of great importance.

2. Camp Management - Camps may be required with facilities to feed clean, well balanced and well prepared meals; provisions must be made for sleeping and rest areas.

3. Timekeeping - Accurate timekeeping facilities must be established to assure that fire fighters or owners of rented equipment are paid amounts due them.

4. Transportation and Other Equipment - Equipment must be provided to haul the men and the tools they use to and from fires. Such equipment must be serviced and maintained. Large equipment such as tractor drawn plows, tractor-dozers, prime movers, and aircraft is often used; maintenance and servicing such equipment is important to an efficient operation. Hand tools, such as axes, brush hooks, electric headlamps, back pack pumps and other similar equipment must be available in the quantities needed and maintained in highly serviceable condition to assure effective production by the men who use them.

5. Communication from the fire camp or camps to the dispatching center, to various parts of the fire and between various sectors and divisions either by radio or telephone is important to all fire operations. It must be established in accordance with Plans developed by the Plans Unit.

6. Procurement and safe distribution of supplies, equipment, manpower and overhead to meet time limitations imposed by the demands of the fire and as dictated by plans approved by the managerial head (Fire Boss) is an important function on all fires.

7. First Aid and Care for the Sick and Injured - Facilities must be provided for this purpose.

8. Demobilization - Time of fire fighters and rented equipment, to assure rapid payment, must be posted and audited insofar as field conditions will permit. Equipment must be returned. Men must be transported to their destinations. Food stuff must be inventoried, etc.

Of the four major functions on a fire, the Service function is one of the most troublesome for the Fire Boss to handle. It is one of the easiest functions for which relief may be provided by assignment of qualified personnel. It is this function, more than any other, that so often occupies the time of a Fire Boss when he should be doing high level work in his other primary functions. Failures in this function are so often the cause of ineffectual and expensive control efforts. For these reasons the Service function should be staffed adequately.

c. The Line Function

Following completion of the detailed plan of strategy for the control of a fire, determination of the tactics to be employed and the general location of fire lines to be constructed, the job of control must be undertaken without loss of time. This entails several specific activities.

1. The fire line must be located in sufficient detail on the ground for the benefit of the line overhead and forces charged with the responsibility of constructing and holding it.

2. Spot fires must be detected and controlled.

3. Line must be cleared of brush or other aerial fuels and down material. Clearing the line to mineral soil by scraping, digging, and trenching with hand tools or power equipment or both is required. Snags both inside and immediately outside the fire line may have to be felled.

4. Burning out the area between the fire edge and the fire line may be necessary.

5. The fire must be mopped-up, and while this is in progress a holding crew may be required.

6. All operations must be inspected to make certain they are being handled in an efficient manner. They must meet a time sequence previously established.

7. Finally patrol must be established until the fire is declared out or safe to abandon.

8. Safety must be the watchword.

d. The Command Function

The three primary functions - Plans, Service and Line - must be knit together to assure that fire operations proceed smoothly. This is done by uniting all functions into an organization setup in a manner which will permit the most effective and forceful execution of the job characterizing each primary function. Factors to Consider:

1. Policy - Know policies, accept them and see they are applied.

2. Making Assignments - Functions must not overlap between individuals. Each individual should have some knowledge of the duties and responsibilities of those working with him. Every functional job on a fire must be assigned to some individual. One individual usually has several jobs assigned to him on the smaller fires, i.e., the Camp Boss may handle communication, supply, equipment, etc., on fires with a light job load. Give each man a full job, then assign extra help only as needed.

Avoid working men long hours which results in excessive fatigue, injury to their health, and poor fire management. Provision should be made for enough overhead to enable men in responsible positions to get adequate rest.

3. Unity of Command - Each person must know to whom he reports, who reports to him. He must be fully informed as to his responsibility and authority. Each person reports to only one superior.

4. Delegation of Authority - The responsibilities assigned must be supported with full authority to act. Clearly define the type of action on which each level of boss (Sector Boss, Crew Boss, etc.) is free to make his own

decisions and those which require approval of his immediate superior. There must be prompt, complete and on-the-line acceptance of responsibility. Do not retain sole decision authority at the top. Limit the number of delegations to those essential to the current needs of the job. It is good practice to delegate decision making as close to the job as possible.

5. Avoid Over Staffing - The organization for a particular fire operation should not be super-staffed or larger than that required by the job to be done. There are situations, however, where such factors as fuels, climatological elements, terrain, are so delicately balanced that the chances for a "blow-up" are imminent. When a situation with this potential develops management should get set for adversity. This means alerting those individuals in the early stages of a fire whose capabilities would be needed should the job develop into a "full staff" deal. It also means using those potential "Plans", "Service" and/or "Line" men on jobs in parallel but lower functional fields until definite staff expansion appears highly probable. Under such circumstances a man capable of filling the Service Chief's position would probably operate as Camp Boss until expansion was necessary; similarly the Plans Chief may operate as Information Officer or a Line Boss may serve as Division Boss.

6. Execution - Execution is conversion of the plan of operation into action. It entails provision for adequate supervision and follow-up. Attainment of adequate supervision and follow-up can be assured if the following actions are taken:

   (a) Select personnel based on previous training and experience for each planning, supervisory or facilitating overhead position on a fire.

   (b) Place the best qualified man available in each position, with preselected and trained alternates when necessary. Allocate equipment to the tasks for which best suited.

   (c) Issue clear-cut and easily understood written instructions for each overhead position in the suppression organization. Corollary to this - such instructions should avoid duplication, overlaps in responsibilities, or duties, or omissions.

   (d) Recognize the need for and provide a "behind the lines" organization to procure and dispatch manpower, equipment, supplies, and facilitating gear ordered by the Fire Boss or his assistants authorized to act for him.

(e) Assign one individual to serve as managerial head of the fire operation. Make it known to all those who serve under his direction that his decisions are final.

7. Employee Relations - Be alert to personal problems, safety and welfare of personnel. Maintain discipline, both organizational and individual. Insist that overhead fulfill their responsibilities. Do not permit individual violation of rules and instructions. Keep personnel informed of fire progress and interesting events that may occur on the job and in their home area.

8. Safety and Training - See that previously prepared Safety and Training Plans are put into effect, immediately operations are initiated.

CLOSE COLLABORATION BETWEEN PLANS, SERVICE AND LINE OFFICERS IS ESSENTIAL. LINE OFFICERS SHOULD NOT CONSIDER THAT PLANNING IS AN EXCLUSIVE FUNCTION OF THE PLANS UNIT. SUCH OFFICERS HAVE CERTAIN RESPONSIBILITIES IN PLANNING AND SERVICING AT THEIR JOB LEVELS. FIELD DECISIONS AND IMMEDIATE PLANS OFTEN MUST BE MADE AND ACTION TAKEN TO MEET LOCAL CONDITIONS SUCH AS SUDDEN CHANGES IN WIND, OCCURRENCE OF SPOT FIRES, SLOP-OVERS, ETC. THE DIVISION, SECTOR AND CREW BOSSES MUST PLAN HOW BEST TO UTILIZE THEIR RESOURCES TO MEET UNEXPECTED CONDITIONS. SUBSEQUENT ACTION SHOULD BE REPORTED TO THE IMMEDIATE SUPERIOR WITHOUT DELAY.

SIMILARLY LINE OFFICERS SHOULD NOT CONSIDER THAT THE SERVICE UNIT WILL DO ALL OF THE ADVANCE THINKING FOR THEM. THEY MUST MAKE THEIR NEEDS KNOWN. THEY MUST ALSO ASSUME CERTAIN SERVICE RESPONSIBILITIES THAT ARE A PART OF THEIR JOB ON THE LINE, SUCH AS SHARPENING TOOLS ON THE LINE, DISTRIBUTING LUNCHES, CARING FOR THE INJURED, etc.

D. PLANNING THE FIRE CONTROL ORGANIZATION

Organization, balanced in all its phases is essential and vitally important to successful fire control operations. Organization of men and equipment by sectors and the fire as a whole and preparation of specific written instructions and supporting maps is a specific and important function on every fire requiring an organization for control. This organization work must be done very quickly and must be correct in all details to assure success.

The size of a fire measured in terms of its perimeter is not the controlling factor when determining the organization needed to control it. Nor is the area of the fire the primary factor to consider when organizing for control. Some

fires, 1,000 to 5,000 acres in size have been controlled with 25 to 50 men while others from 500 to 1000 acres in size have required from 200 to 400 fire fighters for control. Obviously, the organization for the 5,000 acre fire mentioned above would be very simple compared to the organization required for fires having a fire job load requiring 200 to 400 men per shift.

The fire job load for each segment of the perimeter requiring control measured in terms of what is needed to quickly and efficiently control the fire, correlated with fire behavior and terrain features, is the determining factor when estimating the organizational requirements for control.

a. Factors Affecting the Fire Job Load:

The resistance of the fuels along control lines to line construction and holding per unit of manpower or machine.

Resistance to mop-up operations.

Accessibility of the various sectors to attack forces and mobility of forces along the fire perimeter.

Climatological conditions as they affect current and forecasted rates of spread and fire behavior.

Available communication facilities.

Efficiency and physical fitness of available manpower and overhead.

Morale of workers.

Danger to the men.

Elevation and temperature as they affect the ability of men to endure long periods of arduous work.

Values, tangible and intangible endangered by the fire.

Type, quantity and quality of equipment that can be mobilized.

Terrain - whether broken, steep, level, moderate.

Messing and sleeping facilities available.

Time available for control.

The foregoing factors must be analyzed and correlated in detail before the type and size of the organization required to control a fire may be determined.

AS A GENERAL PRINCIPLE NO FIRE BOSS CAN DETERMINE THE ORGANIZATION PATTERN TO APPLY WITHOUT FIRST ESTABLISHING THE CONTROL TIME SCHEDULE FOR THE VARIOUS OPERATIONS ON A FIRE AND THEN CALCULATING THE FIRE JOB LOAD INVOLVED IN SUCH CONTROL OPERATIONS IN TERMS OF NUMBERS OF FIRE FIGHTERS, EQUIPMENT AND FACILITATING GEAR NEEDED TO MEET THE SCHEDULE. WHEN MAKING THIS DETERMINATION THE FIRE BOSS MUST WEIGH THE FACTORS OF ACCESSIBILITY AND BEHAVIOR AS THEY AFFECT THE MANAGEMENT OF MEN AND EQUIPMENT.

In the development of the Organization pattern the help that may be available from local Cooperators and key men should not be overlooked.

b. Span of Control in Organizing for Fire Suppression Operations

There is a practical limit to the number of units one person can direct. No individual occupying a Command, Service, Plans, or Line position on a fire should have more personnel or machines working than he can effectively supervise and manage. Other jobs assigned to an individual such as Planning by the Fire Boss reduces the time available to supervise personnel and work machines. No set ratios may be applied "straight across the board" concerning the number of fire fighters or pieces of equipment under one boss or the number of lower level supervisory personnel under the direction of another individual. However, when setting up organizations for control this factor must be considered in each case. The following organizations are proposed with this in view:

E. SUGGESTED FIRE CONTROL ORGANIZATIONS

a. Basic Organization Guides

It is recognized that all fires will not fall precisely into one of the following fire job loads. Fire management must determine the Organization for each fire. These examples are provided to guide the thinking of fire management personnel.

1. The One Man Fire - The Two Man Fire - Consider the simplest fire where one man makes successful attack. There is no organization except the "behind-the-lines" organization supporting him such as dispatching, servicing, etc. The individual has no one to supervise. Hence there are no Command duties. He calculates probabilities, determines the plan of strategy to apply to control the fire, selects tactics to employ, does all the line work required; services himself such as obtaining drinking water, etc. This individual is in charge of the three primary functions: Plans, Line and Service. This is possible since the amount of thinking and work involved in effectively doing the non physical jobs that needs to be done are not great. The physical work involved in the construction of held line is his greatest effort. The one man fire is the simplest phase of all fire operations measured in terms of the "on-the-line" organizational requirements.

   Adding one man to the force on the fire changes the situation. When two men are working, someone must be boss. On a fire this man is termed the Fire Boss by the U.S. Forest Service. Directing the second man takes some time - the Command function is added to his duties. The welfare of the second man must be considered. The fire can be attacked in two places when but one was possible before. It can be seen more time must be spent by the first man (the boss) in planning, directing, supervising, inspecting and servicing than before with somewhat less time remaining available for actual line construction; although the greatest part of the boss' time will be spent in construction of fire line where only one other man is involved.

2. The Small Suppression Crew Fire (6 line workers) - Assume there is a fire requiring a small suppression crew to effect control. It can be seen that as the number of line workers is increased more and more of the time of the Fire Boss is taken up with such duties as scouting, planning the strategy for control, location of line, supervising and directing the work of the line workers, seeing that the men get water, are fed, and other similar work. The Fire Boss spends less time in actual line construction compared to the case where he has but one man to supervise.

Functional responsibilities: The Fire Boss of a six man crew is charged with all Line, Plans, Command and Service functions.

The basic fire organization proposed to manage a fire requiring six line workers per shift is shown on Chart 1.

The foregoing organization is based solely on manpower. Assume a plow unit is used to construct the fire line. The Fire Boss position remains unchanged. However, the Fire Boss, in addition to knowing how, (1) to "size-up" the fire and formulate plans for control, (2) to activate the suppression plan, and (3) to direct and supervise his men, must know how to effectively apply the tractor plow unit to the control job. Also since the fire line will be constructed with mechanized equipment an operator specialized in plow operation in all its phases is required. Usually when plow units are used the line must be "burned-out"; following burning out operations the line must be mopped up and while these activities are going on holding forces are required. On fires having a fire job load requiring a Fire Boss, one Plow Unit, an operator to operate the Unit, and 2 or 3 men for burning out, mop-up, and holding the organization usually conforms to the following pattern:

A Fire Boss who "sizes-up" the fire, formulates plans for control, locates the line, and activates and directs control forces.

An Operator who plows the line located by the Fire Boss.

A position to "burn out" the plowed line.

Two more positions to hold the line while "burning out" is progressing.

After the line has been completed around the fire and "burned out", the entire crew, immediately undertakes the job of mop-up, and, while this work is in progress, holds the fire line against possible "slop-overs." The amount of mop-up needed varies with the type of fuel and other conditions.

Assume a tanker unit is used to control a fire. The Fire Boss position remains unchanged excepting the incumbent must be intimately acquainted with tanker operations and the use of water in controlling a fire.

The Organization for a fire with a fire job load requiring one tank truck, an Operator and 2 or 3 men for control usually conforms to the following pattern:

A Fire Boss who "sizes-up" the fire, formulates plans for control, selects point or points of attack, and activates and directs control forces.

An Operator who manoeuvers the tanker as directed by the Fire Boss and helps operate the pumping unit, and when possible, pulls hose, etc.

A nozzle man who, with the Fire Boss directs the stream of water on the fire.

One or two positions - usually to help with the job of pulling hose, of opening a path for the nozzle man or to handle such other tasks as required.

After the fire has been "knocked-down" all members of the crew undertake the job of line construction and while this is in progress holds the fire in check until the fire line is completed. Following completion of the line the fire is mopped-up with water or hand tools; usually a combination of both.

3. The Medium Suppression Crew Fire (14 line workers) - Consider the situation where 14 line workers and the Fire Boss constitute the control force. The work involved in planning effective use of line forces becomes greater as the number employed increases. The time spent by the boss in supervision and direction of line work increases if no assistance is provided. More time is involved making certain the men have food, have water and are provided with an opportunity for rest. The total time available to the Fire Boss is not sufficient to handle all functional activities. Some means must be found to relieve him of part of his work. The simplest means of doing this is to relieve him of the intimate job of directing the work of the individual crew members. This can be done by assigning their direction to other individuals. But this poses the question; how many sub-bosses will be needed?

Most fire fighters (workers) on large fires are untrained or at best not well trained in the art of fire fighting, in using the tools commonly employed or in the U.S. Forest Service type of fire organization established to control fires. What is the maximum size

crew a sub-boss (Straw Boss) can direct and supervise? The number could conceivably be 10 if each man occupying a position in the crew were a fully trained fire fighter. However, this is so rarely the case on large fires that, for all intents and purposes, it may be eliminated from consideration.

Considering the "mill-run" type of fire fighter, six line workers are about the maximum that should be assigned to a Straw Boss to supervise and direct. Under some circumstances the number of workers per subcrew will vary downward with terrain, fire behavior, job to be done and degree of training of both workers and Straw Bosses. It is conceivable that under the most adverse conditions the number of men to be assigned to a Straw Boss may be quite low - in the neighborhood of three workers.

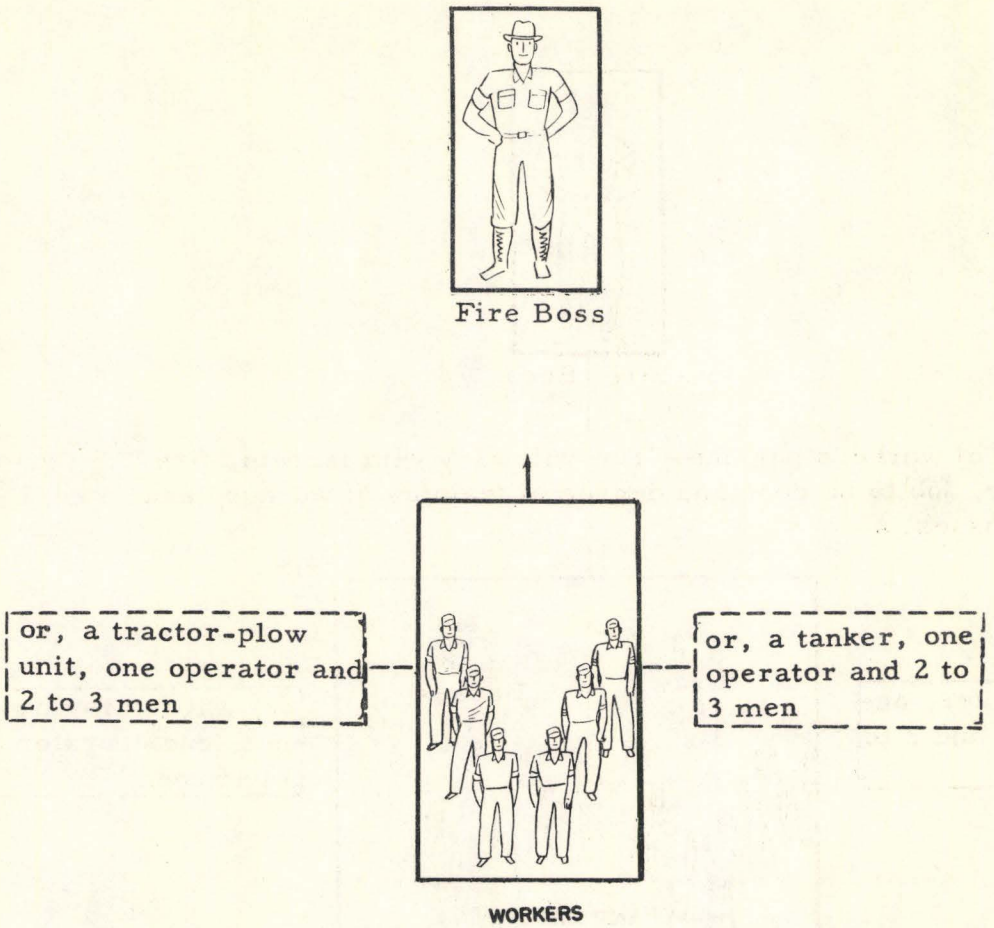
Two Straw Bosses normally, are assigned to a crew of 12 men; each to direct the work of six line workers. Straw Bosses are line workers. Hence they constitute part of the force of fourteen line workers.

The man in charge of the fire actually assumes the importance of a Fire Boss on a fire where the overall calculated fire jobload is light - not more than fourteen men. He is termed a Medium Suppression Crew Fire Boss and excepting for the direction of individual crew men has charge of all activities including the direction of two Straw Bosses. He will build some line himself but most of his time will be devoted to other work such as Commanding, Planning and Servicing.

> Functional responsibilities: The Fire Boss is charged with all Line, Plans and Service functions. He also is fully responsible for Command except that he releases some of his Command duties to the Straw Bosses who are assigned the job of directing workers in their respective crews.
>
> The basic fire organization proposed to manage a fire requiring 14 line workers per shift is shown on Chart 2.

The substitution of a Plow Unit or tanker for the basic manpower organization changes in a minor way the type of organization to apply to the control job. For the type of line organization to apply refer to the discussion under E-a-3.

Chart 1



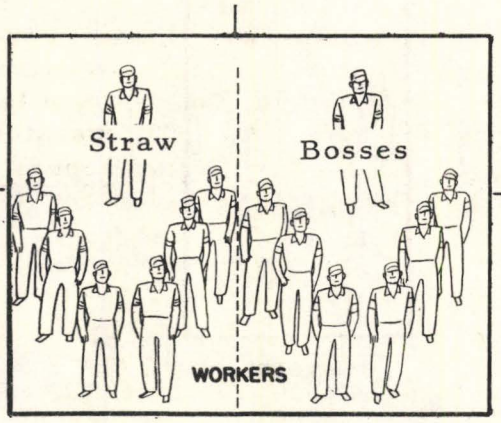
SMALL SUPPRESSION CREW FIRE
(6 Line Workers)
Basic Fire Organization Proposed to Manage a Fire Requiring 6 Line Workers per Shift

Chart 2

Fire Boss

Number of workers per Sub-Crew will vary with terrain, fire behavior, job to be done and degree of training of workers and straw bosses.

or, a tanker, one operator and 2 to 3 men



or, a tractor-plow unit, one operator and 3 to 5 men

MEDIUM SUPPRESSION CREW FIRE
(14 Line Workers)
Basic Fire Organization Proposed to Manage a Fire Requiring 14 Men Per Shift

4. The Large Crew Fire (21 line workers) - Increasing the number of line workers from 14 to 21 normally requires the employment of three Straw Bosses. It can be seen that the time required to supervise and direct the work of three Straw Bosses has increased compared to (3) above, leaving less time available for the Fire Boss to handle his Plans and Service activities. The Fire Boss in final analysis must have adequate time for his Plans work. It can never be slighted. He must have time, also, to manage that portion of the Line, Service and Command functional work that must be retained by him. The only way these objectives may be realized is to relieve him of the details of the Line and certain Command functional activities. This can be accomplished by assigning one or more individuals (Crew Bosses) to supervise and direct the Straw Bosses. How many Crew Bosses is the question.

Crew Bosses normally have other duties such as details of line location, welfare and safety of men in addition to their primary job of directing the work of Straw Bosses. As a general rule, Crew Bosses should not be expected to direct more than three Straw Bosses who are not fully trained. If the Straw Bosses are well trained a Crew Boss may be able to direct effectively four Straw Bosses - never more.

Since it is a sound principle for a boss to be close to those he directs, terrain has some bearing on the number of subordinates who can be directed effectively. This is an important consideration and in rough terrain the number of Straw Bosses a Crew Boss can direct may be reduced from 4 to 3 if they are well trained; if the Straw Bosses are not well trained it is conceivable that the number of such men a Crew Boss can direct may drop to as low as two.

Fire behavior, also, has a bearing on the number of Straw Bosses. If the behavior of the fire presents a potential danger to the men the number of Straw Bosses assigned to a Crew Boss should be less than the normal standard of 3 to 4.

The Crew Boss, under this organization setup, supervises and directs the activities of the Straw Bosses, handles details of line work and helps the Fire Boss with his line scouting and Service activities.

This type of organization makes it possible to attack the fire in two or more places which is of tremendous aid in the control of small fires.

The Fire Boss under the foregoing conditions is termed a Large Crew Fire Boss.

Functional responsibilities: The Fire Boss retains all Plans and major Service, Command and Line responsibilities. The Crew Boss has both Command and Line functional duties pertaining to his supervision and direction of the Straw Bosses in their line activities. He also has minor Service and Plans function responsibilities. The Straw Bosses have that part of the Command and Line responsibilities pertaining to the supervision and direction of men under them.

The basic fire organization proposed to manage a fire requiring 21 workers per shift is shown on Chart 3.

5. The Multiple Crew Fire (63 line workers) - If the fire job load increases from one requiring 21 line workers to 63 line workers the same general Line Organization as shown under (4) above is required excepting for the addition of the required number of Straw Bosses to direct the additional line workers and Crew Bosses to supervise their work. For 63 line workers, 9 Straw Bosses and 3 Crew Bosses would meet normal requirements. (Straw Bosses are included in the number of line workers.)

If the fire is burning in a highly accessible area the Fire Boss is usually able to accomplish the necessary informational work (scouting). Conversely, if the fire is burning in rough terrain or its behavior is potentially serious it may be necessary to assign a scouting position to reduce the load on the Fire Boss; thus providing him with more time to plan and direct the overall operation.

When as many as 63 line workers, including Straw Bosses, are employed, timekeeping, feeding, communication, transportation, safety and similar work have increased to a degree making it impossible for the Fire Boss to handle all of it. A Camp Boss position to plan, supervise and perform the duties of the Service function involved in a simple servicing operation will be necessary and must

be added to the Organization to make it operate efficiently. The Camp Boss must have kitchen help to prepare and serve the meals. He also must have a tool maintenance man to recondition tools as required. In most cases fires involving about 63 line workers require an individual specifically assigned to the timekeeping activity.

In the event no fire camp is provided for messing and sleeping men a fire headquarters must be provided and a position comparable to that of the Camp Boss set-up to manage the fire headquarters, timekeeping, transportation, etc.

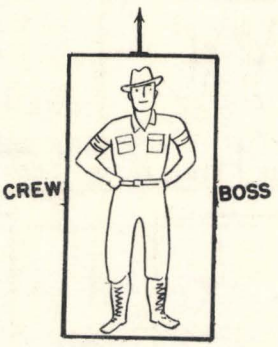
The individual assigned the job of managing the above described organization is called the Multiple Crew Fire Boss.

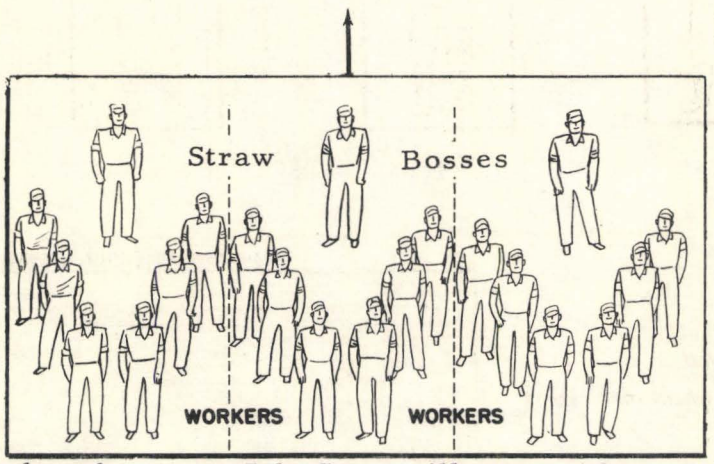
Functional responsibilities: All Plans work is retained by the Fire Boss, with major Service decisions, Line and Command function work also retained; all supplies, communications and equipment work pertaining to the Service function excepting tool maintenance is personally handled by the Camp Boss. Cook and flunky help are assigned to the Service function as needed. Thus the Command functions as they pertain to men engaged in Service work are vested with the Camp Boss. The Line and Command functions and minor Service and Plans work pertaining to Straw Bosses and their Crews are vested with Crew Bosses. Similarly the Line and Command functions pertaining to fire fighters are vested with the Straw Bosses.

The basic fire organization proposed to manage a fire requiring 63 line workers per shift is shown on Chart 4.

Chart 3

Fire Boss





Number of workers per Sub-Crew will vary with terrain, fire behavior, job to be done and degree of training of workers and straw bosses.

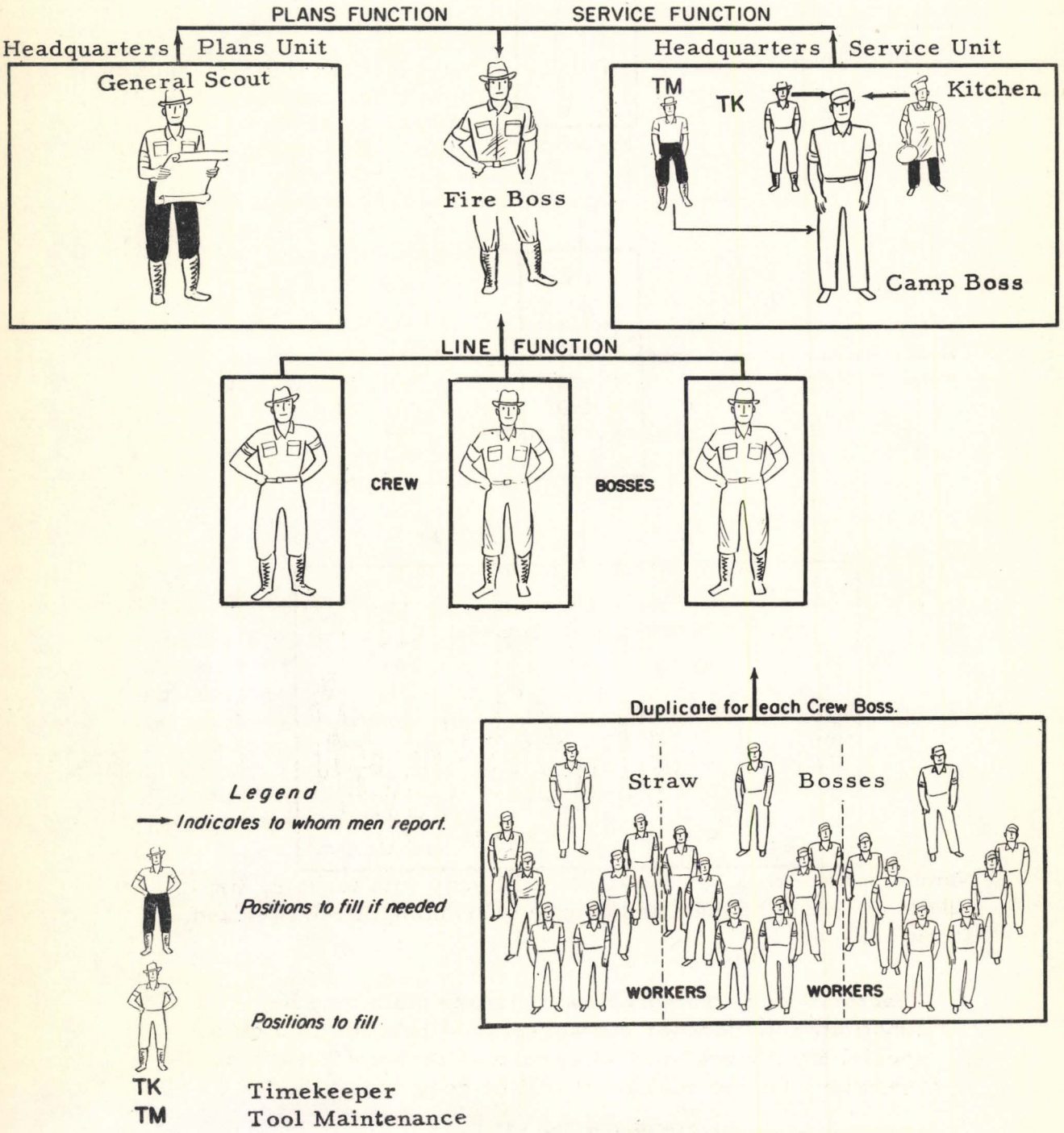
Tractor-dozer, tractor-plow or tanker units may be substituted, in part for the workers. When this is done a special Equipment Boss will replace the Crew Boss; also Operators for the equipment will be required.

LARGE CREW FIRE

(21 Line Workers)
Basic Fire Organization Proposed to Manage a Fire Requiring 21 Line Workers per Shift

Chart 4

MULTIPLE CREW FIRE
(63 Line Workers)
Basic Fire Organization Proposed to Manage a Fire
Requiring 63 Line Workers per Shift



Number of: (1) Workers per Sub-Crew, (2) Straw Bosses per Crew Boss, (3) Crew Bosses per Fire Boss and, (4) Service and Plans Overhead will vary with terrain, fire behavior, job to be done and degree of training of individuals involved. Avoid weak or excessive staffing of the fire organization.

Identification of the positions on Chart 4 and other Charts which follow and which are otherwise not identified on the Charts follow:

LINE FUNCTION		PLANS FUNCTION	
Fire Boss	- FB	Plans Chief	- PC
Division Boss	- DB	Information Officer	- IO
Line Scout	- LS	Maps & Records Officer	- MR
Line Locator	- LL	General Scout	- GS
Line Inspector	- LI	Weather Forecaster	- F
Safety Officer	- SO	Photo Interpreter	- PI
Line Boss	- LB	Financial Advisor	- FA

SERVICE FUNCTION

Service Chief	- SC
Supply Officer	- S
Camp Boss	- CB
Air Officer	- AO
Equipment Officer	- EO
Communication Officer	- CO
Timekeeper	- TK
Tool Maintenance	- TM
Kitchen	- K
Transportation Officer	- TO

6. The Two Sector Fire (126 line workers) - If the fire job load for a fire requires the employment of 126 line workers per shift the Fire Boss does not have time to give personal direction to the Crew Bosses without lowering standards applying to the Plans function. In the organization depicted on Chart 4, the Fire Boss normally would have direct charge of three Crew Bosses, a Camp Boss, and probably a Scout. Appreciably increasing the number of personnel for him to supervise would not leave him sufficient time to perform his other duties. These duties involve major Service and Supply decisions, securing information on which to base decisions, and planning strategy and tactics for control. They cannot be slighted.

Managing 126 men normally requires the employment of 6 Crew Bosses. Since it is vital that the Fire Boss keep abreast of the Plans work he cannot delegate this responsibility to others. Because he cannot be relieved of his Plans work, assistance must be provided to supervise and direct the Crew Bosses and otherwise handle much of the Lines' work excepting for major decisions.

Supervision of 6 Crew Bosses requires the use of another position to relieve the Fire Boss of the details of line supervision and direction. Individuals assigned to these positions are termed Sector Bosses. But what is a Sector and how many Sector Bosses will the job require?

A Sector is defined as a unit of fire perimeter between designated points of which all parts and activities can be personally inspected by an individual from 3 to 4 times per shift if this proves necessary.

The Sector Boss, like the Crew Boss, has great responsibility for the safety of his men. He must see that the line is located properly. He must in most cases, handle scouting work applying to his sector as it affects the details of line location. He must contact the other Sector Bosses on adjoining sectors. He must cover that portion of his sector 3 to 4 times per shift where circumstances, such as hot line, troublesome line, etc., warrants. These additional duties take time which reduces the time available to direct the work of Crew Bosses. Ordinarily not more than 3 Crew Bosses should be assigned to a Sector Boss. If his other duties are not too heavy and the terrain is not too rough a maximum of 4 Crew Bosses may be assigned provided the behavior of the fire presents no serious danger to the men.

A fire with a fire job load consisting of 126 line workers normally requires the employment of two Sector Bosses.

Numbers of line workers have increased. Additional sleeping and feeding facilities, more communication and equipment and a greater procurement problem confronts the individual handling the Service function. The job has increased to a point requiring the employment of a Service Chief. However, the Service Chief can serve also as Camp Boss, hence no Camp Boss position is usually needed during the shift the Service Chief is on duty. The Service Chief requires some assistance particularly in timekeeping, tool maintenance, and in the kitchen.

Plans work has increased. Some assistance is required. This is accomplished by assigning a Maps and Records Officer to assist the Fire Boss in this phase of his work.

The position provided to manage a fire organization with this fire job load is termed the Two Sector Fire Boss. The Fire Boss for fires of this job load normally directs the work of one Service Chief, Two Sector Bosses, a Maps and Records Officer and probably a scout.

Functional responsibilities: Major responsibility for Line and Command work, and all Plans work excepting some line scouting and details of maps and records work is retained by the Fire Boss; major Service work such as equipment, supply and communication is handled personally by the Service Chief. He also supervises personnel engaged in timekeeping, tool maintenance, and camp operations; the Sector Bosses are charged with Command and Line work pertaining to their respective Crew Bosses and sectors also have minor Service and Plans responsibilities; for functional responsibilities of Crew and Straw Bosses refer to (5) above.

The organization proposed to manage a fire requiring 126 line workers per shift is shown on Chart 5.

7. The Three Sector Fire (189 line workers) - Assume a fire of larger proportions requiring 180 - 200 line workers per shift.

The overall control job is more complex. Scouting needs have increased. There is a greater Service and Supply problem. Planning has become complicated. The time of the Fire Boss is more and more taken up with Plans and Command work. He has less time to devote to detailed direction of line work and practically no time to devote to work involving the Service function.

A Service Chief and an Information Officer are assigned to relieve the Fire Boss of most of the Service work and much of the details of the Plans activity. A Communication Officer and an Equipment Officer are assigned to help the Service Chief. A Camp Boss is provided for each shift. The Information Officer and Service Chief are directed and supervised by the Fire Boss.

If the terrain and fire behavior are a critical hazard to the safety of the men a Safety Officer may be required.

The additional load placed on a Fire Boss, particularly in the Planning and Command fields, does not leave him with sufficient time for detailed management of the line activity if accessibility is poor. However, if the fire does not require more than three or four sectors, it, usually, can be managed as a single division fire. Line activities and the supervision of the Sector Bosses can be assigned to a Line Boss. (This position has formerly been called a Division Boss by some individuals). He represents the Fire Boss and is his field supervisor in suppression action on the fire. He executes the major Line functions of the plan prepared by the Fire Boss.

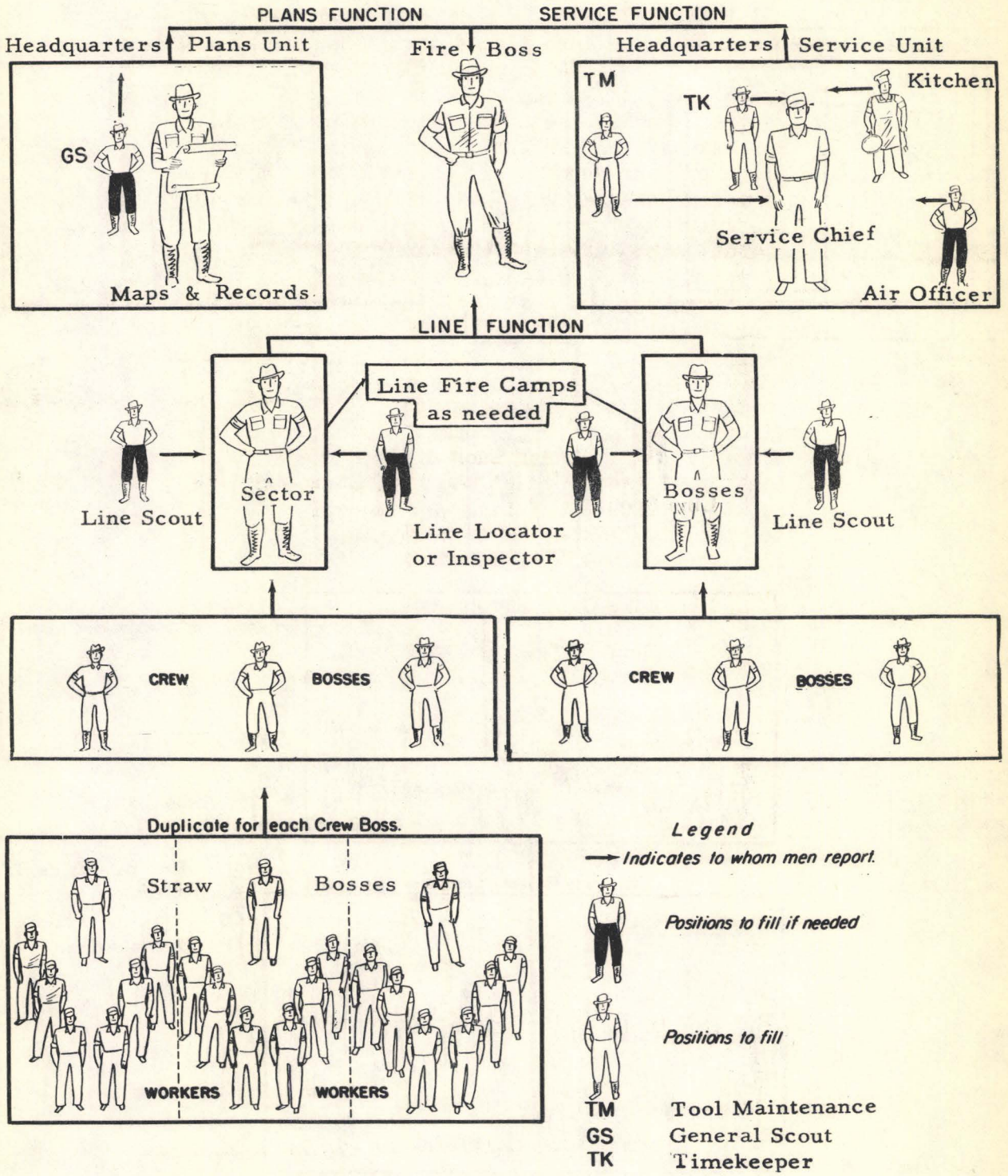
(A Line Boss is not recommended for Three Sector fires characterized by normal behavior and excellent accessibility. Under such circumstances the Fire Boss usually can direct the activities of the three Sector Bosses. Conversely, if accessibility is poor, terrain rough, and the behavior characteristics of a fire indicate that a blow-up may develop, a Line Boss is recommended. He should not be assigned more than Three Sector Bosses to supervise under average "blow-up" conditions and not more than four under ideal conditions.)

The individual handling fires of this class and fire job load is known as the Three Sector Fire Boss and normally supervises the work of one Service Chief, a Line Boss (or 3 Sector Bosses if conditions permit) and an Information Officer in addition to his other important duties such as Planning, etc.

Functional responsibilities: The Plans work excepting for details, major Command and only highly important Line and Service work is retained by the Fire Boss; the Service Chief has Command function duties pertaining to the direction of his men and personally handles the Supply work; the Camp Boss has Command duties pertaining to those he directs; the Line Boss is vested with major Line duties and has that part of the Command function pertaining to the supervision and direction of Sector Bosses; he also has certain Service and Plans work to manage. For functional responsibilities of Sector, Crew and Straw Bosses, refer to (5) and (6) above.

Chart 5

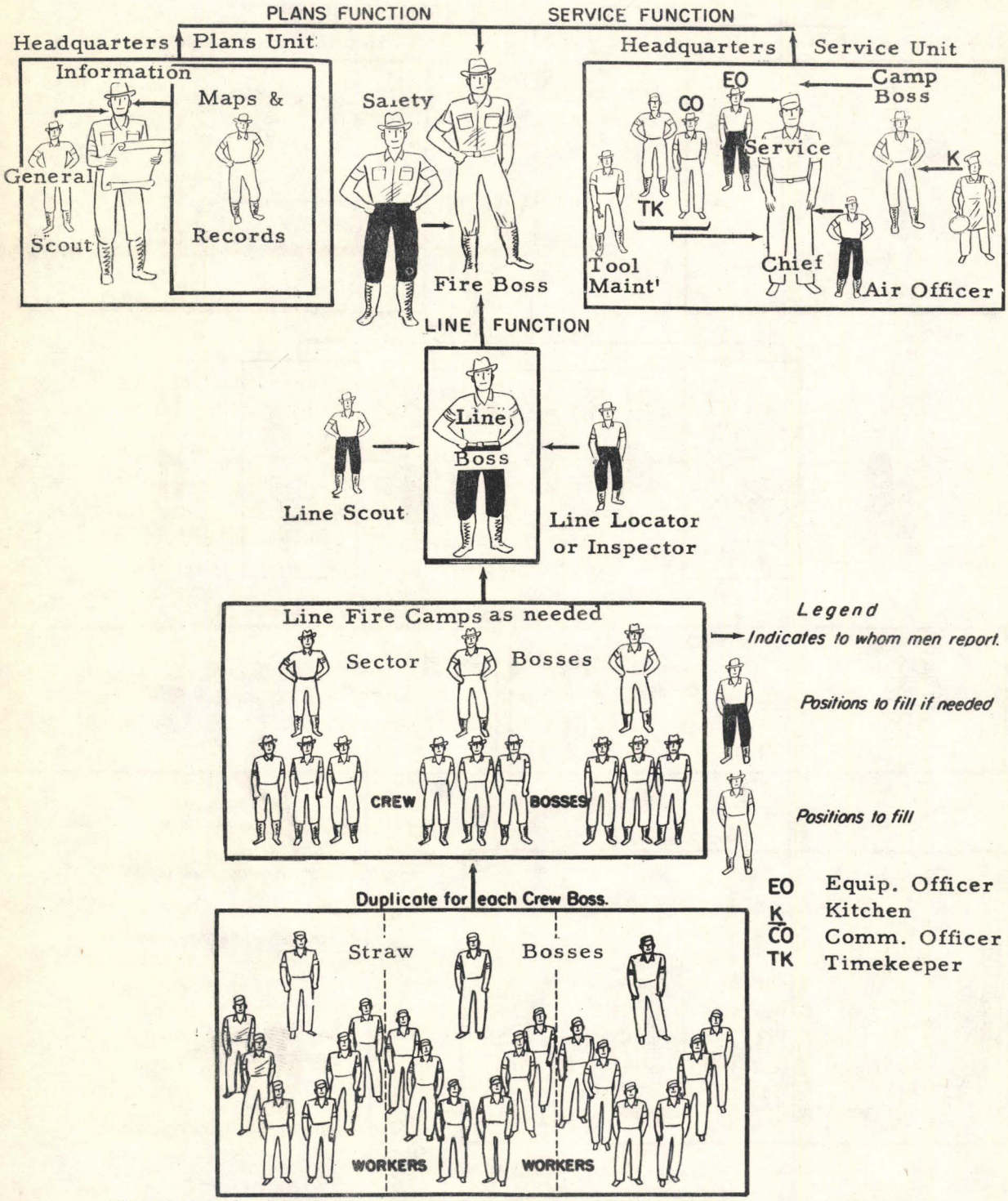
TWO SECTOR FIRE
(126 Line Workers)
Basic Fire Organization Proposed to Manage a Fire
Requiring 126 Line Workers Per Shift



Number of: (1) Workers per Sub-Crew, (2) Straw Bosses per Crew Boss, (3) Crew Bosses, Line Scouts, Inspectors and Locators per Sector Boss and (4) Plans and Service overhead will vary with terrain, job to be done, fire behavior, and degree of training of individuals involved. Avoid weak or excessive staffing of the fire organization.

Chart 6

THREE SECTOR FIRE
(189 Line Workers)
Basic Fire Organization Proposed to Manage a Fire
Requiring 189 Line Workers per Shift



Number of: (1) Workers per Sub-Crew, (2) Straw Bosses per Crew Boss, (3) Crew Bosses, Line Scouts, Locators and Inspectors per Sector Boss, (4) Sector Bosses per Line Boss or Fire Boss, and (5) Service and Plans overhead will vary with terrain, fire behavior, job to be done, and degree of training of individuals involved. Avoid weak or excessive staffing of the fire organization.

The proposed organization for a fire having a fire job load requiring 189 fire fighters per shift is shown on Chart 6.

8. The Two Division Fire (378 Line Workers) - A Division is a unit of perimeter of a complex fire terminated by topographic or cultural features, of which all parts and activities can be inspected by an individual twice each shift if necessary.

Once a fire reaches proportions exceeding in complexity the normal large fire or its behavior indicates it will not be controlled until it reaches complex proportions, coordination is more difficult, collection of needed information becomes more complex, and inspection and checking work increases. The need for large numbers of men is greater. The organization must be increased to assure that it is adequate and properly balanced to control complex fires having a heavy fire job load.

If 378 line workers are used, 54 Straw, 18 Crew and 6 Sector Bosses usually must be employed to maintain the normal span of control. As numbers of Sector Bosses increase the number will reach a point where one individual will not be able to supervise, inspect and direct their work in the detail required by the Fire Boss.

The supervision, direction and other work involved in managing 6 Sector Bosses is then turned over to Division Bosses. How many Division Bosses will be needed to meet normal requirements?

Division Bosses operate at a higher level than Sector Bosses. They have more freedom of action regarding such matters as line location, burning out operations, etc. They have, for the same fire, greater length of perimeter to cover. Under some circumstances they may supervise division Line Scouts, Line Inspectors, and/or Line Locators. Division Bosses should cover the troublesome sectors of their divisions at least twice per day which in rough terrain reduces the time available to supervise and direct the Sector Bosses. Three Sector Bosses are about the maximum number that can be supervised effectively by one Division Boss - never more than four even under ideal conditions.

Line inspection, location and scouting assumes greater importance. Hence such positions are established on each division when needed. Although Chart 7 indicates

that these positions are placed under the direction of Division Bosses, they may assign these positions to the sector or sectors where they are needed. When so detailed they operate under the command of the Sector Boss to whom assigned.

The time of the Fire Boss is more and more taken up with planning and the duties involving the Command function. He no longer has time for detailed planning work - collecting and correlating information, preparing the Communication Plan, etc., so he assigns a Plans Chief to handle such details for him. On fires of this complexity safety is a problem, and when conditions warrant a Safety Officer must be provided to help the Fire Boss look after the safety of the workers.

Equipment management work is increased, supply problems are magnified. Two positions are required to help the Service Chief in his work, namely, an Equipment Officer and a Supply Officer. If heavy use is being made of privately owned transportation equipment it usually is necessary for the Equipment Officer to have an assistant assigned to manage the transportation. This individual is termed the Transportation Officer. He handles the work included in the Equipment Boss' job description involving transportation management

The Fire Boss is so involved in his planning work and overall command problems that he can devote but little time to detailed line functions. If accessibility is poor or the fire is delicately balanced between "blow-up" and "probable control" he needs someone to help him handle major phases of the line work. This is done by assigning a Line Boss as his field representative to supervise and direct the work of the two Division Bosses.

The Line Boss must be more experienced than the Line Boss assigned to Three Sector fires since Two Division fires are more complex. He executes the line plan prepared by the Fire Boss or may represent him in particularly bad situations on a fire as conditions warrant. A Line Boss is appointed also to serve as the field Commander of the Fire Boss when the Fire Boss, is "off-shift". When serving in this capacity he supervises other Line Bosses who are assigned to supervise and direct the Division Bosses. The minimum number of Division Bosses to be assigned to a Line Boss is two with three being the maximum.

Fires of this complexity and fire job load cost a great deal to control. Large sums can be wasted unless timely calculations are made to acquaint the Fire Boss and Plans Chief with operation costs as plans for control are being formulated. Also current checks must be made to make sure timekeeping, procurement and utilization of control forces and equipment are being managed efficiently. A Financial Advisor (Administrative Services Manager) is assigned the Fire Boss to serve as "watch dog" on expenditures. The individual occupying this position does not have authority to dictate what should be done to control the fire. It is his primary responsibility to see that timekeeping, procurement, and similar activities are being carried forward in a business like manner. Also to calculate for the Fire Boss what various operations may cost if, when the plans are being formulated, a choice is possible.

More than one fire camp is normally required when fires of this complexity and fire job load are involved. It is usually sound planning to have one fire camp per division on the fire; never more than two divisions operating out of one fire camp. Consequently, where needed, line camps or small field Service Units are established. When so established they operate under the direct supervision of the appropriate Division Boss. A channel of communication between the Line Camp and the Headquarters Fire Camp is provided since all orders and requests must be channeled through the Headquarters Fire Camp to assure balanced management.

Similarly a Division Boss may require a small field Planning Unit. When such a unit is needed it operates under his control and direction with a channel of communications provided between it and the Headquarters Planning Unit where overall coordination is affected.

The individual placed in charge of fires with the foregoing job loads and planning complexities is termed the Two Division Fire Boss.

> Functional responsibilities: The major Plans and Command function, important Line functional decisions and only major Service functional decisions are retained by the Fire Boss; all detailed Plans work and Command of those he directs is under the jurisdiction of the Plans Chief; Line and Command functional activities pertaining to those he directs are vested with the Line Boss when employed; otherwise the Fire Boss; major Service and such Command

functional work, as it applies to those he directs, are vested with the Service Chief; major Line functional duties excepting for major decisions involving departure from Plans, minor Plans and Service duties as they apply to the division, and Command functional work applying to their men are vested with Division Bosses; for functional responsibilities of Sector, Crew and Straw Bosses, Camp Bosses, etc., refer to (5) and (6) above.

The basic fire organization proposed to manage a fire requiring in the neighborhood of 378 line workers per shift is shown on Chart 7.

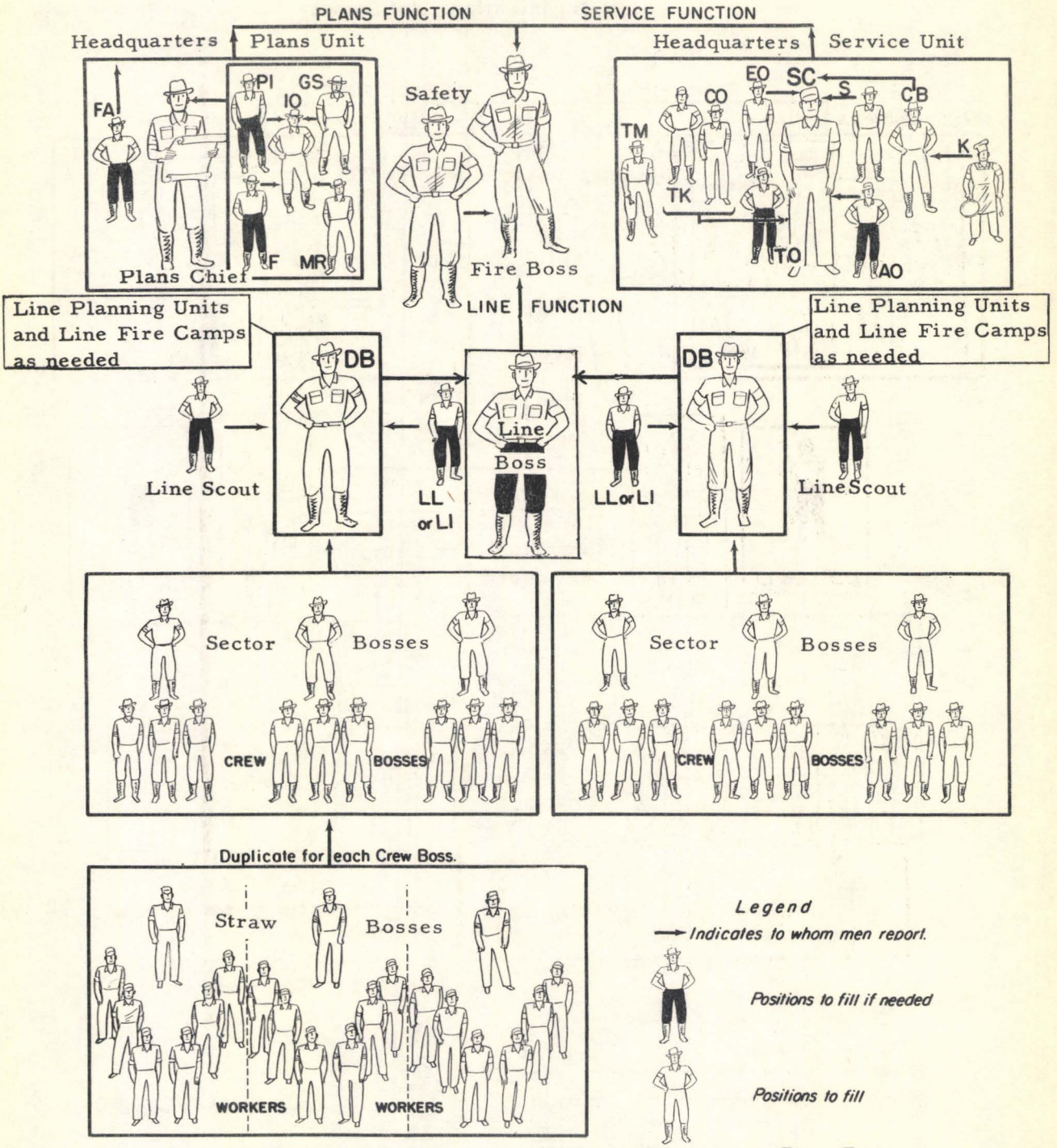
9. The Multiple Division Fire (945 Line Workers) - Management of a fire requiring more than 2 divisions introduces difficulties for the Fire Boss unless he is provided some additional assistance. Two choices are possible. If the fire can be most effectively managed as a single operation, there would not be any great change in the organizational set-up. The primary problem is one dealing with direction and supervision of the Division Bosses and providing facilitating personnel to assist the Plans and Service Chiefs as necessary. This can be resolved by adding another position to assist the Fire Boss in his Line work and to add facilitating personnel as required.

An additional Line Boss position is added who with the other Line Boss associated with the Organization shown on Chart 7, helps supervise and direct the Division Bosses. Line Bosses receive their instructions from the Fire Boss and are responsible to him for fulfillment of his plans as they pertain to the line work on their respective divisions. A Line Boss as previously stated usually cannot direct and supervise the work of more than three Division Bosses. If more than two Line Bosses are needed, the fire should be examined very thoroughly to determine if control should be handled as two separate operations each in charge of a Fire Boss, the independent actions of whom are coordinated by a Fire Coordinator.

Individuals qualified to manage fires involving more than two divisions are termed Multiple Division Fire Bosses.

Chart 7

TWO DIVISION FIRE
(378 Line Workers)
Basic Fire Organization Proposed to Manage a Fire
Requiring 378 Line Workers Per Shift



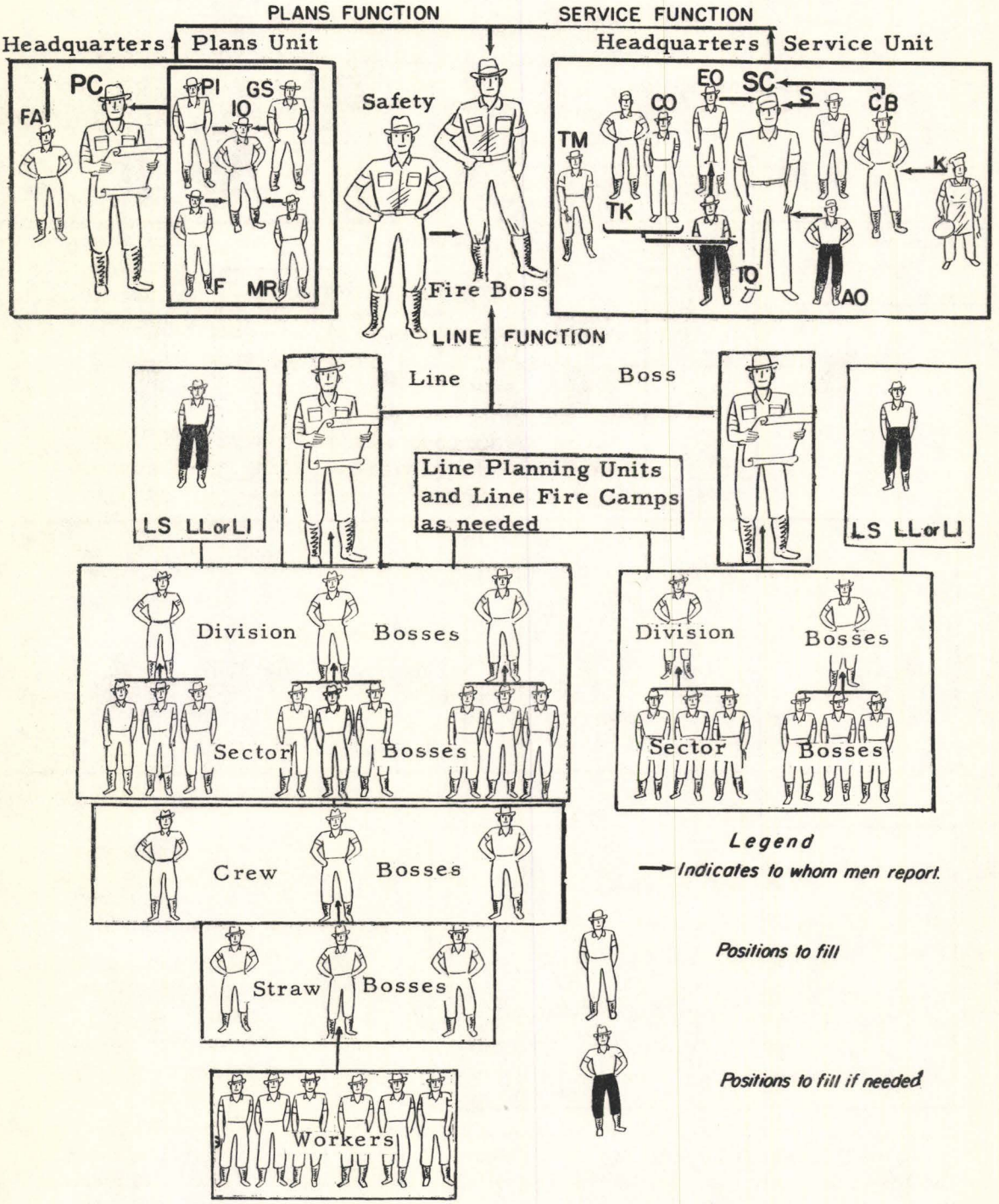
Number of: (1) Workers per Sub-Crew, (2) Straw Bosses per Crew Boss, (3) Crew Bosses per Sector Boss, (4) Sector Bosses, Line Scouts, Locators and Inspectors per Division Boss , (5) Division Bosses per Line Boss, and (6) Service and Plans overhead will vary with terrain, fire behavior, job to be done, and degree of training of individuals involved. Avoid weak or excessive staffing of the fire organization.

Chart 8

MULTIPLE DIVISION FIRE

(945 Line Workers)

Basic Fire Organization Proposed to Manage a Fire Requiring 945 Line Workers Per Shift. (Line Fire Camp and Line Planning Organizations Not Shown)



Number of: (1) Workers per Sub-Crew, (2) Straw Bosses per Crew Boss, (3) Crew Bosses per Sector Boss, (4) Sector Bosses, Line Scouts, etc., per Division Boss, (5) Division Bosses per Line Boss, (6) Line Bosses per Fire Boss and, (7) Plans and Service overhead will vary with terrain, fire behavior, job to be done, and degree of training of individuals involved. Avoid weak or excessive staffing of the fire organization.

Functional duties pertaining to such positions as the Fire Boss, Line Bosses, Division Bosses, Plans and Service Chiefs are similar to those described under (8) above.

The basic fire organization proposed to manage a fire that can be controlled as a single operation and requiring up to 5 divisions and 945 line workers per shift is shown on Chart 8.

10. The Coordinator Stage Fire - A fire may be so located that it must be handled as two or more fires. An example of such a situation is typified by a major fire that is burning on both sides of a river or other large drainage. The fire on one side of the river may require separate operational treatment. It may require development of control plans having only secondary relations with the fire on the opposite side of the drainage.

Whenever a fire is so serious and so located it must be handled as two or more separate fires, or whenever two or more complex fires or numerous serious smaller fires in the same general area are in progress, a fire coordinator (Chief Fire Boss) must be appointed whose duties and responsibilities are to:

Handle the liaison work between each fire.

Approve the general plan of control proposed for each day.

Determine territorial limits and general overall plan of action and accomplishments for each fire.

Keep posted on status of control, safety problems and general plan of strategy for each fire and how it fits in with the overall plan for control.

The organization for each fire under the foregoing circumstances will be parallel with the organization discussed under the headings, Multiple Crew, Two Sector, Three Sector, Two Division, or Multiple Division stage fires depending on the complexities and fire job load involved on each fire or parts of a single fire to be operated separately. For example, a part of the fire on one side of the river or drainage may need a Three Sector stage type of fire organization while the fire on the other side of a river may require a Two Division stage organization due to its greater complexity and heavier fire job load.

When fires of such complexities are "underway" a Liaison officer is needed to maintain liaison between the Fire Bosses and the Fire Coordinator or between one agency and another if two separate protection agencies are involved.

b. Specialized Equipment Units and the Fire Organization

The Line control job, for discussion purposes, may be divided into several functions. The first function involves such matters as location, hot spotting, detailed line location and spot fire detection. The next functional job usually involves line cutting, clearing, and scraping, or extinguishing the fire edge with water. A dozer or a plow unit may be used for the clearing and scraping job or a tank truck to extinguish the fire edge with water.

After the line has been located, cleared of brush or down material, scraped to mineral soil, the next functional job may be burning out between the line and the fire edge. After the line is burned out it must be held. A tank truck, a bulldozer or a plow unit may be used to assist in the holding job. Following "holding" comes mop-up. Tank trucks, dozers and power saws may be used in mop-up operations, although the greatest effort usually involves men and hand tools. The last job before abandonment of the fire sector is patrol and inspection. Usually hand labor is involved. However, a tank truck may be used in the final phases of this work if the fire is located along a road.

In many areas equipment such as plows, dozers, tankers, power saws, etc., are employed to construct line or otherwise assist in the control of fires. The use of the equipment serves two control purposes - it may reduce the number of men needed or speed up control.

Tractor dozers, plows, tankers and other specialized equipment when used on a fire should be under the immediate direction of men specialized in this field - i.e., Tractor Dozer, Plow, or Power Saw Bosses, etc.

When these special skills are employed the question arises: where in the organization should they be placed: They should be placed under the direction of the Fire Boss up to and including the Multiple Crew fire and under the direction of Sector Bosses on all other fires. When this is done, the number of Crew Bosses a Fire Boss

is able to supervise must be reduced to allow him time to direct the work of these specialists; similarly when Sector Bosses have such specialists under their direction the number of Crew Bosses they are to supervise must be reduced to permit them sufficient time to direct their activities.

Chart 9 shows the organization on a sector of a fire where a dozer is used to scrape and clear a fire line and power or hand saws are used for snag felling operations. It can be seen that the addition of power equipment does not change the type of organization employed on the sector. The Sector Boss, instead of having a Crew Boss in charge of the clearing and scraping operations, has a Cat Boss to supervise the work of one or more tractor operators. Similarly he substitutes a Power Saw Boss (Falling Boss if hand equipped) for a Crew Boss to supervise the operation of the power saws (or hand outfits) in snag felling work.

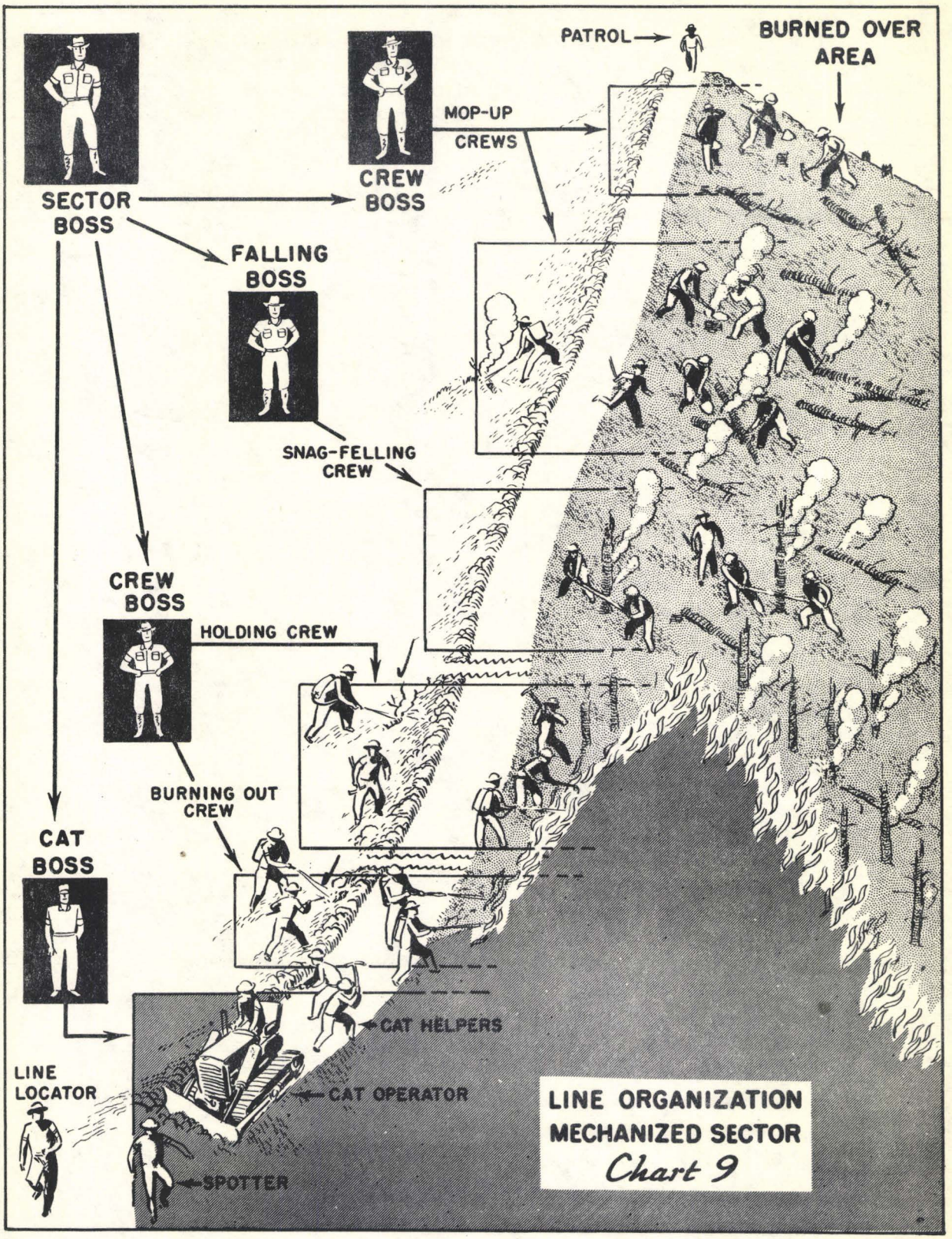
The functional operations as depicted on Chart 9 are a Line Locator who locates the line, a Spotter who locates the details of the route to be followed by the tractor operator, a couple of helpers to "muck out" the line behind the tractor operator and otherwise help him in his work. The Spotter, tractor operator, and helpers are supervised by the Cat Boss who in turn is directed by the Sector Boss. The Line Locator is directed by the Sector Boss or the Sector Boss may handle this work. A burning out crew follows behind the tractor operator an appropriate distance burning out the line and taking care of the immediate line holding needs. This crew is supervised by a Straw Boss, or if the "burning-out" operations are critical by an individual especially skilled in this work. A holding crew (size depending on needs) holds the hot line until "burning-out" has quieted down to an extent relieving the immediate danger of slop-overs. This Crew is supervised by a Straw Boss or Straw Bosses - depending on the job to be done. The Straw Bosses in charge of the burning out and holding operations are supervised by a Crew Boss who operates under the direction of the Sector Boss. As the fire edge cools off snag felling crews proceed along the fire line felling such snags as are on fire or otherwise may prove dangerous. (They may follow the mop-up crew or precede the tractor crew depending on circumstances). If power saws are used a Power Saw Boss is employed who directs the work of the crew. Next a mop-up crew made up largely of men with hand tools completes the mop-up work. These men are supervised by Straw Bosses each reporting to his Crew Boss who in turn reports to the Sector Boss.

A plow could be substituted for the dozer under certain circumstances. Its substitution would not change the type of fire organization. If the dozer line, as shown on Chart 9 had been a road certain minor changes would be required in the organization. The presence of a road from which a backfiring job is to be done would of course eliminate the Spotter, the dozer and the operator and his two swampers, also the Cat Boss. The burning out crew would be required so there would be no change in this phase of the organization. The holding crew would probably use a tanker or two complemented with the required number of men. Hence, a Tanker Boss would replace the Crew Boss and probably would be placed in charge of both the burning out and holding crews. The tanker operator would serve in the capacity of a Straw Boss. It may be seen that although the presence of a road in Chart 9 would change the details of the fire organization on this sector it would not change the type of organization employed.

If for example, this fire were located in an area of no snags the snag felling crew would not be needed, hence the Power Saw Boss would be eliminated from the organization. Again, however, the organization would be changed only in detail and not in its major components.

For example, in the piney woods area of the southeastern states, holding the fire line is a minor problem except for a brief period immediately following burning out operations. There is practically no mop-up work to be done compared to mop-up work required in much of the West or the mountainous areas of the East. Hence in the piney woods area the fire organization on a sector is very simple since the number of men required to locate, construct, burn out, hold and mop-up the fire line is quite small. The primary job is one involving management of equipment and the men who operate such equipment-line locators, burning out, holding, and mop-up forces.

It should be remembered that when a number of tractors, plows, tankers, and power saws are used special direction of such operations are needed each under the direction of a specially qualified boss and equipment crews. These crews may be used as support for line clearing, burning-out, snag felling and line holding crews or may operate independently in either case under the immediate direction of either the Fire Boss or Sector Bosses, depending on circumstances. Each special Equipment Boss' span of control may be either one to two tractors or plows, 3 to 5 tankers, 3 to 5 power saws, 1 to 2 power burners, 4 to 5 portable pumpers, or 3 to 5 hand felling sets.


PATROL
BURNED OVER AREA
MOP-UP CREWS
CREW BOSS
SECTOR BOSS
FALLING BOSS
SNAG-FELLING CREW
CREW BOSS
HOLDING CREW
BURNING OUT CREW
CAT BOSS
CAT HELPERS
CAT OPERATOR
LINE LOCATOR
SPOTTER
LINE ORGANIZATION
MECHANIZED SECTOR
Chart 9

c. The Fire Headquarters and its Relations with Line Service and Plans Units

A fire headquarters should be established for all fires requiring appreciable reinforcements and is required whether or not men are fed in camp. The establishment of a fire headquarters is important since the dispatcher must know where to send men and equipment. If provision is not made for a fire headquarters it probably will result in men going directly to the fire without being properly instructed as to their operational duties; confusion would be the result.

Each fire of consequence must have a principal Planning Unit. Where men are fed in camp or quantities of equipment are used a Service set-up also should be provided at the fire headquarters. As the fire job load increases it will reach a point where it is not good management to have all of the men on a fire operate out of the Headquarters Fire Camp. The breaking point is usually reached when more than one division organization is operating on a fire during the same shift. Under such circumstances it is usually advisable to have in addition to the Headquarters Service and Planning Units parallel line units for each division operating away from the headquarters set-up. A Division Boss operating out of a Line Fire Camp has additional duties compared to a Division Boss operating out of the fire headquarters set-up. He has increased responsibilities concerning the Service and Plans Units when provided for his division. His relationship with the Service and Plans Units is somewhat similar to that of the Fire Boss with regard to the Headquarters Units although at a somewhat lower level. By "lower level" is meant that all decisions are subject to review by those in charge of the Plans and Service Units of the Headquarters Fire Camp.

The organization for each Line camp will depend on the number of men and quantity and types of equipment operating out of the camp. It will vary from the very simple Service organization consisting of a Camp Boss, timekeeper, etc., to a more fully staffed Line fire camp organized to handle the Service needs of many men and much equipment.

When Line Service Units are operated the individual in charge reports to the Division Boss and also funnels all his requests for equipment, food stuffs, etc., to the Service Unit of the headquarters set-up. Similarly the simple Plans Unit at the division Line level reports to the Division Boss who coordinates its work with the headquarters Plans Unit. Line Service Units are often assigned

to Sector Bosses and when assigned the Officer in charge reports to the Sector Boss. Rarely are Line Plans Units provided for Sectors.

d. Behind-the-Lines Requirements

Ordinarily after a fire is reported action starts with the fire dispatcher. The Dispatcher fulfills the Plans and Service needs until the Organization is established on the fire.

He, assisted by others, when necessary

Receives, records, and verifies all reports regarding the fire and determines the correct location.

Assigns nearest forces promptly to initial attack.

Determines and activates additional scouting needs if required.

Initiates all follow-up action and designates the field mobilization point and fire headquarters.

Notifies superior officer in charge of the area in which fire is burning of location, action taken, and weather predictions if it looks as though fire will not be controlled by initial attack forces.

When necessary, alerts other Dispatchers and Local and Cooperator Crews.

Notifies local landowners and key community resource managers of the situation and its potential when necessary.

Provides communication facilities during early stages of the fire.

After a Fire Boss has been assigned or following establishment of the Fire Headquarters, fills promptly all requisitions received for overhead, men, supplies and equipment, and keeps Fire Boss informed through channels as to time of delivery at the Fire Headquarters or other designated points.

Keeps fully advised as to the availability of additional crews, specialists, overhead, equipment, food, and all other facilities that may be required for control.

Assists Plans and Service Units on the fire from his central location.

Receives information on demobilization plans and takes such action as he believes necessary to see appropriate parties are informed.

The Dispatcher can handle all the "behind-the-lines" work such as mobilization of manpower, management, supervisory, specialists and other personnel, procurement of food, camp equipment, transportation, specialized equipment, etc., for fires with a light (100 to 250 men) job load. When fires each with a heavy job load are in progress in a common area the "behind-the-lines" work is usually greater than the Dispatcher can handle. When this situation develops the "behind-the-lines" work is accomplished by assigning two "top-level" positions with such assistants as are necessary to handle the work required by the field Service and Plans Units.

Usually mobilization of manpower, overhead and equipment specialists, heavy equipment such as dozers, plows, prime movers, specialized equipment such as power saws, radios, tankers, flame throwers, aircraft, etc., is assigned to the Dispatcher.

Procurement of food, camp supplies and equipment, transportation equipment, first aid supplies, gas, oil; headquarters management of timekeeping, other business management functions, etc., are assigned to a headquarters Service and Supply position (usually the Administrative Assistant on a National Forest). He usually has as his assistants, headquarters warehouse men, telephone operators, a transportation officer, purchasing clerk, etc.

The "behind-the-lines" organization is vital to successful operations on fires. Although details pertaining to the type of organization required have been purposely left out of these discussions, this does not minimize its importance to the efficient and effective management of men and machines on the fire.

F. ALTERNATES

Fires lasting more than one shift will require a day and night organization. Stating it another way individuals occupying such positions as Maps and Records Officer, Camp Boss, Line, Division, Sector, Crew and Straw Bosses, etc., must be provided relief so they may obtain proper rest. There are three primary positions on fires lasting beyond the first shift for which alternates are not usually provided. These positions are the Fire Boss, Service and Plans Chiefs. Making no provisions for Alternates does not mean that individuals occupying these three positions are not provided with opportunity for rest. Rest opportunities are provided by assigning a strong Line Boss to handle the line responsibilities of the Fire Boss when he is resting. Similarly a strong Camp Boss handles all Service work for the Service Chief during his rest period in addition to his normal job of operating the fire camp. The Information Officer for the period the Plans Chief is resting handles all Plans work. Usually periods of rest for the foregoing principle positions on a fire are scheduled to coincide with the least dangerous periods of the fire.

This method of operating these three primary positions -- Fire Boss, Service and Plans Chief is necessary to assure continuity in executive direction so essential in all fire operations; also continuity of responsibility for the overall fire operation is assured.

G. SUMMARY

Summarizing, the organizational phases for control of forest fires vary from the simple to the complex with the positions to be filled varying in accordance with span of control, the calculated fire job load, and the type of positions required. The Fire Suppression Organization Guide which follows indicates how the positions to be filled on a fire vary with the fire job load measured primarily in terms of line workers.

As power equipment such as power saws, dozers and plows are used the number of line workers, Crew and Straw Bosses will decrease. However, the number of Specialists, such as Cat Bosses, will increase, although not proportionately in all cases. The size of the Service Unit will decrease from that shown in the Guide as the number of men to be served decreases due to the substitution of power equipment except that it will be necessary to increase that part of the Service Unit dealing with the operation, and servicing of heavy power equipment.

The size of the Planning Unit will remain unchanged since the substitution of power equipment for hand tools does not change, downward, the magnitude of the planning job.

FIRE SUPPRESSION ORGANIZATION GUIDE

POSITIONS TO CONSIDER			CALCULATED FIRE JOB LOAD PER SHIFT NUMBER LINE WORKERS AND PROPOSED ORGANIZATION							COORDINATOR STAGE
			14	21	63	126	189	378	945	
PROPOSED LINE ORGANIZATION	FIRE BOSS	MEDIUM SUPPRESSION CREW	1							
		LARGE CREW		1						
		MULTIPLE CREW			1					
		TWO SECTOR				1				
		THREE SECTOR					1			
		2 DIVISION						1		
		MULTIPLE DIVISION							1	
		COORDINATOR								1
	LINE BOSSES	LINE BOSS					*	*	2	
		DIVISION BOSS						2	5	
		SECTOR BOSS				2	3	6	15	
		CREW BOSS		1	3	6	9	18	45	
		STRAW BOSS	2	3	9	18	27	54	135	
	FACILITATING LINE PERSON'L	LINE INSPECTOR					*	*	*	
		LINE LOCATORS						*	*	
		LINE SCOUTS			*	*	*	*	*	
	LINE SPECIALISTS	PLOW, TRACTOR, TANKER, SAW BOSSES, ETC.	Specialists to serve under a fire boss.			Specialists to serve under respective sector bosses as required.				
** PROPOSED HEADQUARTERS SERVICE ORGANIZATION		SERVICE CHIEF					1	1	1	Organization for coordinator stage fire depends on the fire job load of each separate operation.
		CAMP BOSS			1	1	1	1	1	
		COMMUNICATION OFFICER					1	1	1	
		AIR OFFICER					*	*	*	
		EQUIPMENT OFFICER						1	1	
		SUPPLY OFFICER						1	1	
		TIMEKEEPERS			*	1	2	2	4	
*** PROPOSED HEADQUARTERS PLANS ORGANIZATION		PLANS CHIEF						1	1	
		INTELLIGENCE OFFICER					1	1	1	
		RECORD AND MAP OFFICER				1	1	1	1	
		GENERAL SCOUTS					*	*	*	
		WEATHER FORECASTER						*	1	
		PHOTO INTERPRETER						*	*	
		LIASION							*	1
		SAFETY OFFICER						1	1	
		FINANCIAL ADVISOR						*	1	

* = Fill if needed

** = Provide Line Service Organization as needed

*** = Provide Line Planning Units as needed

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APPENDIX

A. JOB DESCRIPTIONS

The following pages list the titles, responsibilities and duties of most of the positions used in control of fires.

a. Fire Boss

Certain fires require but one man to control, others up to 20-60 or 250 men, with some fires requiring 1,000 men or more. Some are handled as two or more fires. Each requires a Fire Boss. But a Fire Boss that can successfully handle the duties associated with a fire requiring only 6, 10, or 21 men for control probably would not be able to manage the organization, plan the strategy or determine the tactics to be employed on a fire requiring 1,000 men to control.

The qualifications for a Fire Boss vary from the very simple to the very complex. Actually, there are about nine types of Fire Bosses -- those who can plan the strategy, determine the tactics to be employed and establish and manage the organization required on fires involving a fire job load of:

	Men Per Shift or Equivalent in Men and Machines	
1.	6	- Small Suppression Crew Fire Boss
2.	14	- Medium Suppression Crew Fire Boss
3.	21	- Large Crew Fire Boss
4.	63	- Multiple Crew Fire Boss
5.	126	- Two Sector Fire Boss
6.	189	- Three Sector Fire Boss
7.	378	- Two Division Fire Boss
8.	945	- Multiple Division Fire Boss
9.	Fire handled as two or more fires	- Coordinator Fire Boss

In general, the duties of a Fire Boss are quite similar regardless of the fire job load involved. Although similar, they differ widely in degree of difficulty and complexity as the fire job load increases. They are simple and are easy to resolve on fires having a light fire job load but become increasingly complex as the fire job load increases and the fire behavior pattern becomes more difficult to interpret.

The Fire Boss' knowledge of fire behavior, his ability to plan the strategy to apply, and the tactics to employ and leadership ability in the management of men and machines must be greater as the fire job load increases and the behavior of the fire becomes more complex to resolve into plans for control.

Each element in the following job descriptions of the Fire Boss position should be interpreted in accordance with the foregoing general statement when qualifying personnel to serve as Fire Boss on fires of differing degrees of planning difficulty and fire job load.

The Fire Boss has full authority and responsibility for managing a fire control operation within the framework of legal statute and current policy statements.

His primary responsibility is to organize and direct the fire organization toward efficient and complete control of the fire:

Responsibilities during early stages of the fire:

Prior to leaving for the fire, he must obtain the best available information on the location of fire and forces and equipment being sent.

On larger and more complex fires he will usually travel to the fire by a route that will provide a vantage point to size-up the fire and the adjacent country. Where feasible when complex fires are involved he will make this observation from an airplane.

Upon arrival at the fire he will:

Determine probable spread by immediate time periods on small simple fires and probable spread during first burning period on the more complex fires.

Next he will notify the dispatching agency of the adequacy of resources assigned to the fire with an estimate of what the fire may do and what further resources are required for control.

Prepare a plan of control which will insure the most effective and safe use of assigned resources.

Provide positive safe measures to insure proper disposition of resources upon their arrival at the fire.

Organize resources presently working on the fire in keeping with his plan of control.

Actively direct and coordinate the activities of fire suppression for the balance of the shift or until control is effected giving consideration to unsafe and dangerous developments. See that demobilization plans are prepared.

Report changes in conditions unless to do so will interfere with his line supervision duties.

Maintains a communication schedule (by assignment of an individual to this job if personal contact interferes with line supervision).

Prior to crew or sector organization, will assume all the responsibilities of the Crew or Sector Boss.

Organize the line forces into crews, sectors and divisions when required.

Organize needed Service and Plans Units.

Responsibilities of the Fire Boss on the going fire:

Determine strategy and tactical plan for control and issue necessary orders to obtain needed manpower, overhead, equipment and facilitating gear.

Decide on use of off-shift personnel or other available personnel to meet unforeseen or new situations.

Brief Line Boss, Plans Chief and Service Chief where employed. (Crew, Sector and Division Bosses are briefed and interrogated by the Fire Boss on fires where they operate under his immediate direction.)

Conduct strategy meetings when appropriate.

Check on and initiate action to provide for the welfare and safety of all personnel.

Maintain high level of performance.

Take required action on all cases of personnel deficiency.

Anticipate need for and assign work to functional assistants as needed. Prior to their arrival, must perform the duties of all vacant positions in the direct channel of command.

Determine need for Safety Officer.

See that functional assistants when used understand and complete their work thoroughly and within time limits in accordance with plans.

Remain in communication, for emergency consultation except for short periods. Designate an acting Fire Boss with full authority for decision when necessary.

By proper planning and delegation secure sufficient rest. See that subordinates secure all possible rest.

Visit critical and potential problem areas personally.

Determine time when demobilization should start. On fires with a heavy fire job load this involves demobilization of Plans, Service and Line functions.

Make out performance rating for immediate subordinates.

b. Line Boss (Line Chief)

When a fire organization reaches a stage making it impossible for the Fire Boss to devote sufficient time to the supervision and direction of Sector or Division Bosses a Line Boss is required whose primary responsibility is to see that the line plan of the Fire Boss is carried out. He and his line overhead have but one responsibility; this is to direct field action to control the fire in accordance with the strategic and broad tactical plan of the Fire Boss and to see that the work is accomplished with safety. He is provided with a job assignment which specifies the general location, time of completion and, in general terms, the nature of the work to be accomplished. He is informed of control forces (men, tools, specialized equipment and overhead in organized units) and adequate transportation, communication, and camp facilities available. He has latitude to make decisions within the limits of the plan given him.

He is directly responsible to the Fire Boss.

He:

Organizes field forces on his assigned units of the fire in accordance with the plan of control provided by the Fire Boss.

Adheres to the following units of authority and responsibility and performs the duties as indicated by the following representative list:

Reviews the plan of control pertaining to his area with the Fire Boss making such suggestions as he feels pertinent on the basis of personal knowledge of the fire and requesting such additional information as is necessary to adequate performance of his duties.

Briefs his line overhead for the ensuing shift. Checks each to make sure all points are fully understood. Such instructions to include:

Condition of fire behavior and fuel peculiar to locale. Particular note of blow-up possibilities.

Location of work including alternate plan, and division termini. If there are several divisions location of sector termini should be handled by the Division Bosses. Sequence and timing of operation.

Whereabouts and means for his immediate line overhead to contact him during the shift.

Resources assigned and planned organization of the division - on sectors when serving as Line Boss on fires below the Division Stage.

Will keep currently informed of conditions and progress on divisions or sectors assigned him by personally inspecting the more important ones at least once each shift. Inspection will cover the following points in the Line Boss check list:

Is action being taken in accordance with time limits specified in control plan?

Are proper techniques being employed?

Are resources adequate (number, type and condition) for the assigned job?

Does manpower and specialized equipment complement each other?

Are sectors or divisions properly correlated?

Are plans and services adequate?

Are special problems that will carry over to the next shift located, identified and recorded for

transmission to the Plans group upon request and for review with personnel of the relief shift.

Are Sector Bosses receiving guidance and training from Division Bosses?

Are surplus resources being made available for redistribution or release?

Are inter-sector and inter-division resources (such as plows, and bulldozers) being properly shared?

Are strategic and general action plans being followed?

Coordinates activities of all sectors of divisions in his charge and determines need for immediate redistribution of resources to meet conditions as they develop and, if possible, calls them to the attention of the Fire Boss. If need for redistribution is urgent and communication impossible, makes adjustment and notifies Fire Boss at earliest possible moment.

Determines the disposition of planned reserves, calling into action as needed without further clearance. Should if possible, notify Fire Boss of action.

Will coordinate activities of Sector Boss on the Three Sector fire or Division Bosses on other fires by radio, written message or personal interview to keep them assured as to the correctness of action being taken by them.

Participates in reduction in size of overhead organization when the job requirements permit combining of duties.

Will see that subordinates (Division Boss-Sector Boss-Crew Boss) adequately handle timekeeping responsibilities.

Makes out performance ratings of immediate subordinates when required.

True safety is within our reach and needs only to be practiced to be realized.

Note:

Line Bosses are used when required; but usually never below the Three Sector Stage fire.

c. Division Boss

The Division Boss is usually responsible to the Line Boss. His direct responsibility is the control of a designated division of a fire, including all phases of line work, backfiring, mop-up and patrol. He has full authority and responsibility for directing and supervising all work on his division.

The span of control is 3 to 4 sectors. He should be able to cover the hot or troublesome sections of the fire line or fire edge at a minimum of two times per shift using all available modes of transportation and considerable walking.

This rule may be limited to one trip if critical sections demand his presence and the remainder of the sectors are under reasonable control. He pays special attention to potential blow-up conditions, line of retreat for crews and safety areas.

He should not leave his division unless approved by his superior until he has thoroughly reviewed the conditions, problems and accomplishments with the Division Boss of the next shift.

He:

Organizes field forces on his division of the fire in accordance with the plan of control provided by the Line Boss, in some cases by the Fire Boss.

Adheres to the following units of authority and responsibility and performs the duties as indicated by the following representative list:

Reviews the plan of control pertaining to his area with the Line Boss making such suggestions as he feels pertinent on the basis of personal knowledge of the fire and requesting such additional information as is necessary to adequate performance of his duties.

Briefs his line overhead for the ensuing shift. Checks each to make sure all points are fully understood. Such instructions to include:

Condition of fire behavior and fuel peculiar to locale. Particular note of blow-up possibilities.

Location of work including alternate plan. Sector and Division termini. Sequence and timing of operation.

Whereabouts and means for his immediate line overhead to contact him during the shift.

Resources assigned and planned organization of the Division and sectors.

Will keep currently informed of conditions and progress on his division and adjacent divisions. Will personally inspect work on "hot" or troublesome sectors twice each shift. Inspection will cover the following points in the Division Boss check list:

Is action being taken in accordance with time limits specified in control plan?

Are proper techniques being employed?

Are resources adequate (number, type and condition) for the assigned job?

Does manpower and specialized equipment complement each other?

Are sectors properly correlated?

Are plans and services adequate?

Are special problems that will carry over to the next shift located, identified and recorded for transmission to the Plans group upon request and for review with personnel of the relief shift.

Are Crew Bosses receiving guidance and training from Sector Bosses?

Are surplus resources made available for redistribution or release?

Are inter-sector resources (such as plows, and bulldozers) being properly shared?

Are strategic and general action plans being followed?

Coordinates activities of all sectors in his charge and determines need for immediate redistribution of resources to meet conditions as they develop and, if possible, calls them to the attention of the Line Boss. If need for

redistribution is urgent and communication impossible, makes adjustment and notifies Line Boss at earliest possible moment.

Determines the disposition of planned reserves, calling into action as needed without further clearance. Should if possible, notify Line Boss of action.

Will coordinate activities of Sector Bosses on his division by radio, written message or personal interview to keep them assured as to the correctness of action being taken by them.

Participates in reduction in size of overhead organization on his division when the job requirements permit combining of duties.

Will see that subordinates (Sector Boss-Crew Boss) adequately handle timekeeping responsibilities.

Makes out performance ratings of immediate subordinates when required.

True safety is within our reach and needs only to be practiced to be realized.

Note:
Division Bosses are usually used on all fires requiring 3 or more sectors.

d. Sector Boss

Sets in motion and supervises all operations on his sector as outlined by his immediate superior. Attains rate of progress and the quality of performance necessary for suppression of the fire. Determines specifically the time for starting and completing individual operations on his unit. Guides, coaches, and assists Crew Bosses or Equipment Bosses as necessary to secure the quality and quantity of work required. Devotes 95% of his time to fire line activities.

Duties:
Personally leads crews to the job.

Acts as advance Line Locator when possible. Knows Line Locator's duties. Should request and instruct the Line Locator if he hasn't time to do that job himself.

Designates special jobs and assigns sections of line to Crew and Equipment Bosses. Will coordinate activities of hot spot crews, hand and equipment line construction crews, snag felling crews, tanker crews, etc., so that burning-out, holding, mop-up and inspection goes on progressively.

After assignment of personnel, will devote his energies to supervision and training of the Crew Bosses. Will inspect work, train and assist Crew Bosses on unfamiliar activities. Should inspect all of designated unit personally three to four times per shift and take appropriate action as the needs call for it. This rule may be limited to two trips if critical problems demand his full attention and other sections of the sector are under reasonable control.

Contacts adjoining Sector Bosses and agrees on junction points if not designated on the ground by his immediate superior. If the job cannot be accomplished with present resources -- reports to immediate superior.

Keeps immediate superior informed by radio or messenger of progress on his sector as per schedule. Calls attention to surplus or shortage of resources as soon as these become evident.

May change the strategy or general action plan of the sector without immediate approval of his superior when:

Action of the fire forces abandonment of a portion of the line or requires unanticipated action such as control of a break-over or spot fire which cannot be handled as an individual problem.

His immediate superior cannot be reached in time.

Action does not jeopardize the safety of men.

Will remain on his sector until relieved by replacement or by specific instructions of his immediate superior. When being relieved will account for all crews and for all equipment assigned his sector as to location and general condition prior to actual departure from the sector. Will make progress report to immediate superior.

Will see that Crew Bosses record correct time when leaving and arriving at camp. Turns in Crew Boss time to timekeeper.

Will report his own time correctly to immediate superior.

Makes out performance rating for immediate subordinates, if needed.

Will report to superior when jobs of subordinates can be combined to reduce personnel.

Will assign specific jobs and brief Crew Bosses, Cat Bosses, Tanker Bosses, Straw Bosses, etc. In making assignments will:

Describe or point out, where possible, the location of the work.

Define the standard of performance, i.e.:

Width of line or area to be worked.
Time to start the operation.
Time to complete the operation.

Define methods, tools and machines to be employed where doubt exists as to ability of Crew Bosses.

Explain the organization on the sector and the job ahead.

Describe special problems of the unit and define how they shall be handled.

Assist in organization of the crews to accomplish the job.

Tell Crew or special Equipment Bosses about arrangements for service facilities for both men and machines.

Specify arrangements for relief.

Specify safety precautions including line of retreat, safety areas, treatment of injuries by qualified first aid personnel.

Specify location of and use of radio or telephone.

Review off-shift responsibilities of Crew and Equipment Bosses regarding messing, sleeping, first aid, commissary, property accountability, getting men out of camp, equipment operations reports, and time reports.

True safety is within our reach and needs only to be practiced to be realized.

Note:

Sector Bosses not used on fires employing less than the Two Sector organization.

e. Crew Boss (Crew Foreman)

The Crew Boss works under the supervision of the Sector Boss on Two Sector or larger fires otherwise the Fire Boss. He is responsible for the performance of his crew, their safety and their welfare for the duration of their assignment to him; hence has responsibility for them both on the line and off the line.

"On-the-line" duties:

Thorough understanding of the work his immediate superior wants done.

Lays out the work for the Straw Bosses.

Sees that Straw Bosses understand what is to be done and methods and tools to be used. Trains them.

Personally directs the work of the Straw Bosses assigned to him.

Takes initiative in controlling spot fires and escapes in his assigned area.

Remains on the line and works with crew until relieved.

Sees that efforts are not wasted on unnecessary work.

Determines escape routes and safety areas at all times.

Prevents "bunching up", "bull sessions" or loafing.

Keeps men distributed along the line.

Acquaints himself with the work of adjoining Crew Bosses.

Observes and enforces smoking rules.

Teaches men to use and care for tools properly. Is held accountable for tools.

Reports misfits, loafers and agitators to his immediate superior.

Reports men to his immediate superior for discharging.

Keeps immediate superior informed as to additional needs for men and equipment.

Sees that first aid and care are given to injured.

Reviews with crew the time being turned in to timekeeper each shift.

Has all tools taken to camp at night and turned in to the service organization unless authorized to do otherwise.

"Off-the-line" duties:

Designates Straw Bosses if not done by immediate superior.

Checks out crew at time of leaving camp and immediately on return after the shift with timekeeper - on Crew Boss Time Report. Turns own time in to immediate superior.

Inspects crew for condition of clothes, shoes, etc., before taking men on the line. Reports conditions.

Sees that crews have first aid and snake bite kits where needed.

Makes written note of any change of assignment involving a change in wage rate and advises timekeeper.

Sees that transportation meets with safety standards before leaving camp. Reports unsafe conditions to superior.

Sees that men left on the line for special details report to Crew Boss rather than to timekeeper. (Timekeeper is instructed not to accept time from individuals without Crew Boss' signature.)

Understands assignments and works with Plow Bosses or other specialists while operating on his section of the line.

Before leaving camp sees that lunches and water have been arranged for.

Obtains information from his immediate superior as to tools needed and inspects tools for condition prior to leaving camp.

Reports accidents and names of witnesses to Sector Boss -- or Fire Boss where no Sector Bosses employed.

Beds crews in units. Is certain that crew is clear of "air-drop" if bedded down during day time. Sees that beds are turned in before leaving camp.

Keeps crew members clear of air drop areas at all times.

Sees that crew is up and breakfasted and on the line at time designated by immediate superior.

Maintains a good spirit among crew members.

True safety is within our reach and needs only to be practiced to be realized.

Note:

Crew Bosses are used on all fires requiring more than 2 Straw Bosses.

f. Straw Boss

Assigned either by Crew or Sector Boss when needed as a working leader of a small group - usually not more than six men. Is responsible for keeping men fully employed on jobs assigned.

Duties:

Understands exactly what the Crew Boss wants done.

Sees that crew has first aid kits, hard-hats, files, etc., before leaving camp.

Sees that men do a reasonable day's work.

Sees that no effort is wasted on unnecessary work.

Keeps men well equipped with proper tools.

Shows men how to use and care for tools.

Helps Crew Boss in off-the-line and camp duties.

Assists the Crew Boss in checking men out and in with the timekeeper.

Keeps a list of names of men and keeps time if requested by Crew Boss.

Looks after the safety of the men on the line.

Reports lazy and incompetent men and agitators to the Crew Boss.

Observes and enforces smoking rules.

Looks after safety of men during transportation.

Sees that the men have lunches and water.

True safety is within our reach and needs only to be practiced to be realized.

Note:
Straw Bosses are used on all fires requiring more than 6 line workers.

g. Advance Line Locator

A Line Locator is needed when fuel, topography and visibility conditions are such that tractor or hand crew line production is held up because of lack of advance fire edge or ground information.

He works under the direct supervision of and is responsible to the Sector Boss for on-the-ground location of the fire line to be built. It is important that the Line Locator be thoroughly familiar with:

Fire behavior and line location techniques.
What can be expected of the various kinds of equipment.
What can be expected of those for whom he is locating.

Specifically, his duties are:

Familiarizing himself with the general plan of control on the sector or sectors to be worked. Notifies Sector Boss when end of sector is reached so Fire Boss, Line Boss, or Division Boss can be informed.

Locating and marking route to be followed far enough in advance of operation so that if changes are necessary, they can be made before the crews reach the questionable location.

Selecting tractor-dozer or plow line locations that can be traversed by the machine and will avoid:

Wet or soft ground.
Solid rock or extremely rocky ground.
Heavy snag and down log areas.

Contouring on steep slopes.

Slopes requiring a climb in excess of that which can be negotiated by the unit being used.

Loose boulders on brushy slopes.

Keeping the Sector Boss on whose sector he is working currently informed of the progress he has made -- difficulties to be encountered, etc.

General Rules:

Locates line as close to fire edge as possible consistent with burning conditions and strategy outlined by Sector Boss.

Avoids snag patches and heavy down log or slash areas if possible. Keeps these hazards outside of the area to be burned out.

Chooses route to make line construction as easy and rapid as possible, taking advantage of openings, bare areas, barriers, roads, trails, etc.

Avoids as much undercut line as possible and locates line so rolling material will not cross.

Avoids fingered line if possible.

Avoids sharp angles in line.

Locates line a sufficient distance from fire edge so it can be constructed and burned out before main fire reaches it. Takes into consideration fatigue factor of hand crews.

Locates line far enough from burning snags to catch most of sparks and to contain snag if it falls or is felled.

Takes advantage of normal daily shift between up-and-down canyon drafts.

Note:

Use only when needed. This position on Division Stage Fires is usually attached to the Division with assignment by the Division Boss to sectors where the need makes his service necessary.

h. Line Scout

Is responsible to the Officer to whom assigned, either the Fire Boss, Line Boss, Division Boss, or Sector Boss, when conditions are such that the Line Officer or Fire Boss cannot do advance scouting for his unit without detriment to his other responsibilities. Used primarily on the complex project stage fires when heavy timber, smoke or topography limit the gathering of information to arduous foot travel, consequently limiting Plans activities. Obtains full detailed information on location, condition, progress, behavior, and safety within and adjacent to his territorial assignment from or through the Plans Chief and line officer.

Duties:

Secures available information and maps from Plans Chief before going to the fire.

Determines mode of communication and agrees with line officer on communication schedule.

Reviews coordinate system of reporting map locations.

Goes to designated area ahead of control crews, marks route with rags or blazes as necessary. If acquainted with area, may guide crews to area.

Scouts ahead of control crews securing, recording and reporting currently:

Location and behavior of fire edge within assigned area - hot-spots, etc.

Location, size, behavior and potentialities of spot fires.

Fuel types and hazards in and adjacent to fire edge and spot fires.

Possible escape routes and safety areas for crews, if needed.

Possible routes to various parts of fire edge and spot fires.

Water chances enroute.

Areas in which tractors, trenchers, or plows can be used.

Special small equipment needs.

Prevailing winds - slopes.

Upon request of immediate superior:

Acts as Line Locator ahead of crews.

Marks route to spot fires.

Directs small crews to spot fires.

Maintains contact with adjoining units.

Knows Line Locator's job description.

Note:

Use only when needed. This position on Division Stage Fires is usually attached to the Division with assignment to sectors where services are needed.

i. Cat or Plow Boss (Dozer or Plow Foreman)

He is responsible to the Fire Boss on Multiple Crew or smaller fires and to the Sector Boss on all other fires for the efficient use of dozers and plows on the fire. Based on instructions from his Fire Boss or Sector Boss, he will:

Construct the fire line as determined by his administrative superior.

Supervise and correlate the work of the dozers and plows and personnel assigned to his operation.

Provide for the safety and welfare of equipment and personnel assigned to him.

Keep time for all machinery and personnel under his supervision; check it with operators and submit to timekeeper.

Develop an on-the-spot understanding between the dozer (plow) operators and the dozer (plow) crews of the signals to be used in directing the operators. They should include such commands as "stop", "come ahead", "back up", "caution", "cannot see spotter", "turn left", "turn right".

Arrange with immediate superior for relief of operators and other members of his crew or crews.

Make arrangements with Equipment Officer for the proper servicing and maintenance of the machines (fuel, lubrication) with a minimum loss of time.

Inform immediate superior immediately of any breakdowns. Likewise inform him of progress being made and when the job is finished. Avoid long and unnecessary idleness of equipment. (It may be urgently needed elsewhere.)

Be alert to the following good management practices when using dozer equipment:

When working close to the fire avoid carrying fire outside the line. Hot burning logs and stumps should be pushed into the burn away from the line.

Do not allow operator to bury fire or leave "dozer piles" within the burned area. Scatter or remove them as they may hold fire for weeks and cause the eventual loss of the fire.

Take advantage of favorable fuels and topography.

Keep men away from the vicinity of the tractor or plow.

Advise all members of his crews of the hazards of the job and have adequate plans of escape to be used in event of a blow up.

When two or more dozers or plows are used as a unit or worked in tandem, see to it that they work far enough apart for safe operation. Likewise, that they do not become so widely separated that they cannot be communicated with.

Long sustained grades on the fire line should be broken in order to avoid excessive erosion.

Personally supervise loading and unloading of tractors and other heavy machinery when possible.

Will report completion of assigned job to immediate superior.

True safety is within our reach and needs only to be practiced to be realized.

Note:
Use only when needed.

j. Power Saw Boss (Power Saw Foreman)

The Power Saw Boss works under the supervision of the Fire Boss on all fires below the Sector Stage, under the Sector Boss on all other fires and is responsible for the work of the men and equipment assigned to him. This is a highly specialized field requiring the services of a man who is not only familiar with fire control requirements but is well versed in the mechanical operation of power saws and the job of felling timber. The work may consist of partial cutting of logs in front of a tractor, cutting logs for hand or plow line construction, felling snags prior to burning operations or in mop-up operations.

Specifically his duties are:

Familiarizing himself with the basic plan of control on his assigned sector or sectors.

Coordinating the falling operations of his crew or crews with the work of other crews and machines to avoid endangering these facilities and unnecessary delays.

Upon advice from his immediate superior determining the priority of work, selecting snags or snag area most dangerous to control for immediate removal, width of strip to be worked, etc.

Supervising and coordinating the work of the falling crews assigned to him.

Reporting currently to his immediate superior, keeping him informed of progress.

Seeing that arrangements are made for the shifting or release of saw crews no longer needed in the operation.

Knowing the safety requirements necessary and see that saw crews adhere to same.

Keeping correct time reports for fallers' time and power saw operation. Checking time with operators to be sure they are in agreement.

Seeing that arrangements are made for relief or replacement of crews when long shifts are evident.

Arranging for proper care, maintenance and service of saws.

Reporting to immediate superior upon completion of assigned job.

Note:
Use only as needed.

k. Spotter

Works under the immediate supervision of the Cat or Plow Boss and is responsible for following the route ahead of the tractor, laid out by the Line Locator.

If possible, he should be a fully qualified dozer or plow operator and may alternate with the operator. Specifically his duties are:

Works directly in front of the lead plow or dozer a safe distance, follows the general route marked by the Line Locator and signals to the operator the exact course. Uses a flag in daytime and a light at night.

Determines exact location of line from general location by Line Locator.

Warns operator of, or avoids, all hazards as stumps, logs, banks, ditches, mine shafts, snags, loose boulders, rim-rocks, etc.

True safety is within our reach and needs only to be practiced to be realized.

l. Tanker Boss (Tanker Foreman)

The tanker Boss is responsible to the Fire Boss on fires below the sector stage; to the Sector Boss on all other fires for efficient use of tankers or pumpers. This job requires the services of a man who is not only familiar with fire behavior, but also skilled in the correct use of water and hose lays in direct attack on fires and conservative use of water in mop-up. He must also be familiar with the operation and maintenance requirements of various types of pumpers. Based on instructions from his immediate superior he will:

Assign tankers or pumpers to designated locations.

Supervise and correlate the work of the tankers and personnel assigned to his operation. Each tanker

crew foreman should be given specific instructions as to just where and what his assignment is; e.g. hot spotting, working hot line, mop-up, cooling off around snags for fallers, assistance in back firing, etc.

Coordinates work of tanker and hand crews in same area, e.g. tanker crew will work hot line and cool off flames, with hand crew assisting in hose pulling and actual line construction behind tanker crews Hand crew will turn, stir and scrape smoldering material for hose crews in mop-up work.

Inform immediate superior as to approximate location of tankers that can be called upon in emergencies for assistance on slop-overs, spot fires, etc.

Instruct tanker crew foreman to be on alert for spot fires and give immediate attention to them and stand ready to assist adjacent Crew Bosses who might call for help in emergencies.

Advise immediate superior of changes in location of tanker equipment.

Know principles of water use as outlined in pamphlet - "Water vs. Fire."

Work with tanker operator giving any necessary training in proper use of water and see that necessary training is given to the crew.

Give special emphasis in training in use of water to volunteer or pickup crews assigned to tankers and to crews on cooperator tankers.

Inform tanker crew foreman of tanker refill locations, or arrangements for refill by mother tankers.

Make arrangements and issue instructions for correlation of tanker crews for progressive hose lays, up hill water relays, etc.

If necessary, assist tanker crew foreman in developing an understanding between tanker operator and crew on hand signals to be used.

Check with immediate superior on arrangements for relief crews for tankers.

Check with tanker operators to be sure tankers are being properly serviced and whether being operated properly. Check especially when being operated by pickup, coop., or relief crews.

Check with immediate superior (and Service Chief or Equipment Officer) on arrangements for supply and delivery of fuel and lubricating oil.

Check on availability and use of proper equipment, fittings, nozzles, hose, etc., on tankers.

Inform his superior immediately of any tanker breakdowns.

Inform immediate superior of progress being made on assignments and completion of assignments.

Provide for safety and welfare of equipment and personnel assigned to him.

Advise all tanker crew foreman of hazards of the job and have adequate plans of escape to be used in the event of a blow up.

Keep and submit time to timekeeper for all equipment and personnel under his supervision.

True safety is within our reach and needs only to be practiced to be realized.

Note:
Not required on all fires.

m. Service Chief

Works under the supervision of the Fire Boss and in close contact with the Plans Chief.

Is responsible for furnishing all facilities and services called for in the plan of control for the fire. Such services and facilities to include Communication, Transportation, Supply and Camp Management in the proper amounts and at the proper time and place. This includes:

Personnel fed, rested and segregated by units for rapid dispatch. Provision for first aid facilities.

Tools sharpened and segregated.

Vehicles serviced and manned by qualified drivers.

Specialized equipment serviced and manned by qualified operators.

Establishes, maintains and operates fire camps; assigns and supervises personnel needed to operate the camps, will ordinarily select camp locations according to plan, but in absence of such a plan, will independently plan the camp locations needed for proper service of line personnel. When independent plan is made, review by Fire Boss or Plans Chief will precede establishment of camps.

Secure men, tools and specialized equipment as requested by the Plans Chief or Fire Boss. Anticipates requirements in general terms. When given a manpower and overhead list, will independently determine rations, bedding, commissary, and transportation requirements and obtain or have such items immediately available. Is responsible for keeping such supplies available and ready for use as called for. Sees that purchase orders are issued for all purchases and that contracts of hire are made for all equipment hired.

Obtains, services, and operates a transportation fleet to transport men, supplies and equipment. The size and character of the fleet is ordinarily determined by the Service Chief from an analysis of the control plan and anticipation of transportation requirements based on:

Transportation routes.
Facilities available.
Type of objects to be transported.

Decides mode of transportation, schedule of trips, routing, etc.

Establishes, maintains and operates a communication system in accordance with a Communication Plan developed by the Plans Unit that will provide continuous service for:

The Plans Unit and its field personnel.
The line organization.
Service Chief and his outposts.
Fire headquarters and the behind-the-lines agency.
Special needs such as planes, tractors, etc., as determined by the Fire Boss and stated in the plan of control.

Will anticipate normal Service needs on the basis of the organization, personnel, and location of probable control line. Refinements will be based on approved control plans.

In addition to the stated requirements of manpower, tool, equipment and facilities, independently calculated the anticipated attritional losses of the particular fire and requisitions and distributes the items needed to maintain the quantity of control resources at the proper level.

Upon receipt of the planned line organization, organizes and dispatches crews and equipment in accordance with instructions. Is responsible for the line forces until delivered to the place and/or person called for in the instructions.

Specifically, he:

Determines the personnel and organization requirements of the Service Unit. Gives special consideration to reduction of subordinates when job requirements are being reduced.

Determines time required for mobilization of resources.

Determines time required for distribution of control resources from base to key points on line and adjusts camp routine to absorb this time element.

Determines source, quantity and type of unobligated control resources available for assignment to the operation and keeps this information currently summarized and Plans notified.

Maintains contact with secondary camps (line camps) and sees that they efficiently and completely serve line forces.

Determines through consultation with Headquarters Dispatching Unit and the Fire Boss a priority of release for manpower and equipment. As surpluses become evident, organizes and dispatches to their destination.

Determines replacement needs of men, overhead, equipment and supplies and takes necessary steps to have available as needed in accordance with Plans of the Plans Unit.

For each basic item requested (groups of men, equipment, mules, etc.) determines and obtains the supplementary items necessary to make the item a sustained operating unit.

Supervises the work of the Equipment Boss, Supply Officer, Communication Officer or Camp Boss. In their absence or prior to their arrival, must perform the duties of the position.

Sees that accepted safety practices in camp set-ups and transportation facilities are followed.

Sees that adequate first aid facilities are available in camps and on the line.

Assists Plans Chief in the development of the demobilization plan and executes the Service Sections of such plan. This plan includes safe transportation of personnel and equipment to their home bases.

Outlines and supervises the timekeeping job. Sees that timekeepers maintain time records of all personnel and special equipment. Sees that the pertinent parts of this information is provided the Plans Unit.

Note: Service Chief's are usually employed on all fires above the Two Sector stage.

n. Equipment Officer (Equipment Boss)

The Equipment Officer is responsible to the Service Chief for the overall coordination and management of machines and livestock assigned to the fire. This will normally include personnel and supply-carrying vehicles, heavy transports, tractors, power saws, tankers, and pack stock. Depending upon the total job load involved he may have assistants directing, but responsible to him in directing one or all of the following services; tractors, ground transportation, pack stock, saws or tankers. On fires requiring a Two Division Stage or larger Organization a transportation officer usually is essential if large numbers of privately owned transportation equipment is being used.

Specific duties are:

Determine need for special assistance if any required such as transportation officers, service units (mechanics, "lubers," etc.), relief tractor operators, packers, machine expediters, etc., and take action through the Service Chief to secure them.

On the basis of items requested to be transported within specific time limits, determine the type and amount of transportation equipment needed, and see to it that all of it gets to the right place at the right time, and in good working order.

Determine the number of personnel, drivers, mechanics, packers, etc., needed for operation and maintenance of machines and pack stock.

Organize and supervise subordinate personnel.

Maintain current summary of machines showing type and location, and make this information currently available to the Plans Unit.

Arrange for the service and maintenance of all machines and livestock, including bulldozers, power saws, tank trucks, trucks, horses, etc. See that all equipment is covered by contract.

Determine the supplies (gasoline, oil, repair parts, forage, saddles, lubrication units) needed to maintain the machines and pack stock in safe and efficient operating condition and see to it that they are available on the job. Arrange with Supply Officer for most expeditious ordering.

Select and post, where necessary, the best and safest transportation route to key points on the fire (will check scouting information to determine how much independent work is necessary.)

Establish traffic controls to prevent congestion or accidents.

Prepare traffic schedules which will permit most economical use of transportation equipment.

Turn in time of packers, truck drivers, mechanics, etc., working under him, to timekeeper and check classification to be sure they are correct.

o. Supply Officer (Supply Boss)

Is responsible to the Service Chief for obtaining and distributing all items called for in the plan for control of the fire and with the exception of those duties assigned to the Camp Boss, the Equipment Officer and the Communication Officer, of maintaining them in working condition. Works closely with Dispatcher.

Specific duties are:

Keeps current summary of the location of all items other than personnel and heavy equipment, assigned to the fire. Works in close contact with the Maps and Records Officer.

Checks all orders for completeness; determines need for supplementary items. Maintains adequate stock of essential foods and other items.

Places all orders with supplying agency and/or procures locally in accordance with established procedures. Sees that purchase orders are issued for all purchases made by him.

Establishes time limits and schedules for placing of orders for the various classes of items used and notifies persons responsible for originating orders.

Determines availability of items that may be needed in control of the fire.

Maintains tools and small equipment and assembles by logical line unit for issue each shift. Establishes and maintains a system of accountability.

Determines commissary (tobacco, socks, etc.) needs, procures and arranges for issuance by the timekeeper.

Determines the replacement rate for all items except communication and transportation, and after approval of Service Chief, secures such replacement.

Organizes and supervises subordinate personnel.

Obtains adequate supply of safety equipment, such as stretchers, hard hats, first aid kits, truck seats, tool guards, etc.

Note: Supply Officer used on Two Division and higher stage fire organizations only.

p. Communication Officer

The Communication Officer is responsible to the Service Chief for establishing, maintaining and operating the communication facilities.

Duties:

Determine equipment (type and amount) required to meet communication requirements established by the Plans Unit for the job. Arrange with Supply Officer for most expeditious ordering.

Determine personnel needs - technicians, operators, messengers, and guides.

Determine repair and replacement needs (crystals, tubes, telephone line, batteries, etc.) arrange with Supply Officer for most expeditious ordering.

Install, maintain and operate, communication facilities in accordance with Communication Plan proposed by the Plans Unit.

Prepare schedules to meet requirements of the control plan within the limit of available resources.

Maintain record (map and chart) of location of equipment.

Independently work out and suggest improvements to communication system.

Organize, train and supervise subordinate personnel.

Review communication and safety needs with Line Staff Officers.

Establish message center at base camp through which all messages are sent, received, and recorded.

q. Camp Boss

Is responsible to the Service Chief when one is employed, or to the Fire Boss when not employed, for the establishment and operation of a base of operation. Is furnished with the location, general requirement and time schedule of the particular base.

Camp Bosses of Line Camps are directly responsible to the Division or Sector Boss depending on whether a Division or Sector Line Camp.

Specific duties are:

Plans the detailed layout and sets up the base.

Organizes and supervises subordinate personnel.

Specifically designates and makes assignments to sleeping areas. Sleeping areas to provide for proper segregation of personnel, safety, quiet, and maximum amount of shade for day sleepers. Special consideration should be given to safety in selecting day bedding grounds in air drop camps. All bedding grounds should be roped off or isolated to eliminate any possible danger from tractors and trucks.

Sees that men are provided with proper sanitary facilities within the limits of available resources.

Provides for a safe water supply.

Organizes and schedules the feeding of personnel (including lunches) to meet the requirements of the control plan.

Establishes warming fires, bulletin board and similar facilities as needed.

Establishes and operates a first aid station for treatment of minor injuries. Arranges for treatment of more serious cases by a regular physician preparing necessary forms, etc.

Prepares instructions for Crew Bosses governing their camp responsibilities, time schedules and camp routine while in camp.

Determines supply and personnel requirements for the camp management unit.

Organizes and mobilizes personnel for assignment in accordance with the plans for the shift. Actual dispatch of crews will be done by Service Chief when one is employed.

Reports time of camp help to timekeeper and checks to be sure they are properly classified.

Is responsible for clearing and keeping aerial drop area clear of personnel while dropping is being done.

Handles routine Service work up to and including the Two Sector stage fire.

Note: Camp Boss used on all fires of Multiple Crew or higher fire organizations.

r. Air Officer (Air Operations Boss)

Where one or more aircraft are used on a fire, a qualified employee shall be designated as Air Officer. He is responsible to the Service Chief or Camp Boss if no Service Chief is employed and is in charge of planning, establishing and maintaining the performance standards of the aerial phases of the specific operation in conformity with pertinent regulations and instructions in the U.S.F.S. Air Operations Handbook. In a complete aerial operation assignment of assistants may prove necessary.

His duties include:

Helps plan daily use of aircraft.

Coordinates all cargo dropping, reconnaissance and transportation of personnel.

Assigns ships and personnel.

Schedules all flights and flight missions.

Establishes priorities.

Briefs personnel each day on:

Type of missions to be flown.

Landing points to be used.

Schedule to be maintained.

Weather and smoke conditions.

Hazards such as power lines.

Safety.

Maintains necessary records.

Advises local airports that private aircraft should stay out of hazardous zones during air operations.

Constructs and maintains heliport:

Adequate clearance for approach, landing and take-off.

Install streamer to indicate wind.

Wet down landing spot if necessary.

Service:

Checks with operators on supplies available for operation.

Consults with Supply Officer for most expeditious ordering plan.

Safety:

Ensures full compliance with good safety practices and regulations by thorough investigation and prompt corrective action of any unsatisfactory operational component.

Helicopters:

Keep unauthorized personnel away from heliport.

Train personnel to approach, enter and leave ship properly.

Equip helpers with goggles.

Check on proper loading and unloading of personnel and cargo.

Ground ship during periods of high wind and poor visibility.

Fixed Wing:

Provide cargo dropper with chute and knife.

No loose chutes in plane.

Static line on all cargo.

Safety strap across door of plane if needed.

Cargo packed properly.

Notifies Camp Bosses when drop will be made in order for drop area to be marked and cleared of personnel.

Note: Employ only as needed.

s. Cargo Boss (Cargo Officer)

This position is usually established at the discretion of the Air Officer when the proposed aerial deliveries require a ground crew of three or more men.

The individual filling this position must have knowledge obtained through training and experience to accomplish the following:

Pack cargo parachutes.

Pack supplies and equipment for paracargo or aerial freight units consistent with types of aircraft being used.

Load and unload aircraft (under direction of pilot).

Attach appropriate cargo parachute to the classes and sizes of the selected packaged items.

Ground transportation of supplies and equipment.

Receive and check supplies and equipment as they are delivered to the operating base.

Keep adequate records and reports required.

Supervise and train the men necessary to assist him in accomplishing a successful job.

Safety of personnel.

Note: Employ only as needed.

t. Plans Chief (Plans Boss or Operations Officer)

Works under the supervision of the Fire Boss and in close contact with the Service Chief.

Is responsible for:

Collecting and compiling all data concerning the fire, calculating probabilities and control force requirements.

Collecting and compiling data on resources assigned to the fire.

Preparing individual written instructions of Fire Boss for line personnel to Sector Boss level.

Maintaining all records for the fire, both management and administrative. Such records to include the log of the fire, time records, data for preparation of 929, 10 o'clock report, special narrative report, summary of personnel and special equipment, and accident record.

Assignment of personnel, equipment and tools to line units as specified by the Fire Boss or on his own initiative where instructions are lacking.

Specific duties of the position are to:

Obtain and compile in usable form the following data concerning the fire area and report to Fire Boss.

Location of fire perimeter.

Behavior of fire on all parts.

Topography.

Soil formation and conditions.

Cover (types and density).

Weather conditions, current and forecasted.

Access routes and rate and mode of travel.

Status of control.

Possible camp sites.

Calculate probabilities of the fire including blow-up potentialities and make report to Fire Boss.

Calculate control force requirements and determine type of action most applicable within the limits of available resources. Make report to Fire Boss.

Prepare a statement of communication requirements for the Line and Planning Units indicating frequency of contact and priority of installation and submit report to Service Boss.

Maintain records of manpower, overhead and special equipment showing:

Number.

Qualifications.

Identification.

Location (on-shift, off-shift and where located).

Time in a work status.

Prepare written instructions to line personnel on basis of Fire Boss decisions and instructions. Instructions to include:

Section of line assigned to each unit.

Time allowed for completion of control.

General action plan.

Pertinent information concerning adjacent divisions.

Alternate plan of control and steps required to place in effect.

Location of camps, radios and other service facilities.

Map of fire or at least of assigned unit of fire.

Special explanation as needed for understanding of assignment.

Accident control.

Assist Fire Boss in briefing and interrogation of line personnel.

Plan personnel needs of the Plans Unit. Organize them and supervise their work. Prepare written instructions for these men as necessary.

Prepares demobilization plan for Fire Boss.

Be alert to reduction in volume of work of subordinates and to combine jobs to reduce overhead.

Submit completed fire records and data to agency responsible for fire.

True safety is within our reach and needs only to be practiced to be realized.

Note:

Plans Chief employed on Multiple Division and higher stage fire organizations only.

u. Information Officer (Intelligence Officer - Scouting Boss)

Is responsible to the Plans Chief or Fire Boss when no Plans Chief is employed, for gathering all information to cover all points in the General Scout job description plus any specific information requested by the Plans Chief or Fire Boss. Information to be in the form needed for intelligent analysis and within time limits established for the particular fire. Will determine the requirements of his organization including personnel, facilities, and service and provide the necessary supervision and guidance to insure adequate performance.

Representative Duties:

Establishes and designates key points on line and signs access routes into such points. Prepares map showing these data.

Determines method of safe scouting (foot, horse, plane,car).

Places order for needed transportation for himself and subordinates through the Service Unit.

Determines size of general scouting job and divides fire area into scouting units.

Assigns personnel to complete job in time allotted.

Prepares and issues instructions to General Scouts.

Area assigned.

Data to obtain (See General Scout job description).

Method for recording.

Time and method of communicating data.

Secures and assigns necessary facilities for doing general scouting job (compass, abney, rule, protractor, map sheets, photos.)

Receives all General Scout reports direct. Records data on master scout record. Such record to show location, character, time of observation and magnitude of findings. Will include current accomplishments and anticipated accomplishments by end of current shift. (Progress Map.)

On controlled lines, prepares map of line showing location of special hazards.

Prepares map of areas needing special spot fire attention.

Scouts personally where time and size of job permits and in any event sufficiently to permit intelligent analysis of scout reports.

Makes contact with line personnel and secures their opinion on:

Manpower requirements next shift.

Tools and special equipment next shift.

Problems needing special attention.

Best point for distribution of next shift and point for pickup of present shift.

Locates possible camp sites and prepares map of access route.

Locates and maps unburned islands.

Secures data on line construction rates.

Prepares map of fire by 12-hour periods.

Secures data on values, houses, fences, etc., that may affect control plan.

Prepares photo maps of fire area showing perimeter and other pertinent information such as roads, streams, ridges, spot fires.

Secures aerial photographs of fire edge and terrain ahead of fire.

Safety is within our reach and needs only to be practiced to be realized.

Note: Information Officers employed on Three Sector and higher stage fire organizations only.

v. General Scout

Is responsible to the Information Officer (or Fire Boss, if no Information Officer). Used primarily for aerial scouting alternating with Information Officer. Does ground scouting when planes or helicopter unavailable, or when heavy timber, smoke, fog or topography make aerial scouting unsatisfactory. Person assigned to general scouting job should be whenever possible a local forest officer or a native trained in scouting and familiar with the area.

Duties:

Receives assignment and reviews plan with immediate superior.

Takes flight over fire area, if possible, before scouting on the ground.

Studies aerial photos, topographic maps and administrative maps before going to fire. Secures data from aerial photo interpreters when employed.

Gets as much information as possible regarding area to be scouted from local residents, local forest officers, Line Scouts and line men already on the fire.

Determines mode of communication and agrees with immediate superior on communication schedule.

Agrees with immediate superior on coordinate system of reporting map locations.

Uses horse or pickup for transportation whenever possible and covers balance of area on foot.

Scouts ahead of control crews securing, recording, mapping and reporting as scheduled to his immediate superior:

Location and behavior of fire edge, hot spots, etc., whether smoldering, creeping, running or crowning.

Location, size, behavior, and potentialities of spot fires.

Fuel types, understory or ground fuels, and hazards such as snag areas, slash areas, etc., in, adjacent to and ahead of main fire and spot fires.

Any improvements such as building, power and telephone lines, bridges, etc., threatened or destroyed by the fire.

Weather conditions encountered on ridges, slopes, canyon bottoms, etc., such as wind, temperature, humidity and moisture condition of fuels whether wet, damp, dry, etc.

Indicate whether streams can be crossed on foot or by tractor.

Location of any features not shown on maps, such as trails, roads, streams, springs, etc.

Location of possible camp sites, aerial drop areas, helicopter landing spots, etc.

Location of ridges or other likely control lines, showing steepness of slope, cover, soil condition, etc., indicating whether there are any barriers to tractors such as rocks, steep areas, etc.

Location of streams, canyons, ravines, etc., possible for control lines. Indicate if canyons are too narrow and steep to be used for control lines.

Indicate any special equipment needs.

Possible routes to various parts of fire edge or spot fires.

Possible escape routes or safety areas for crews, if needed.

Report location of crews or "cats" encountered, progress of line construction, held line, controlled line, etc.

Report immediately:

Any condition needing immediate attention such as fire endangering a crew, buildings, bridges, power or communication lines or threatening to cut off routes of travel or trap travelers on highways, roads, etc.

Any threat or condition which might be remedied through immediate attention and prevent excessive work later such as spot fires away ahead of main burn, a hot spot threatening to cross a road or get into a snag area, slash area, etc.

In extremely rough or hazardous country, scouts should work in pairs.

Note: Employed only as needed. When Plans Chief is employed he is responsible to him, otherwise the Fire Boss.

w. Maps and Records Officer

Is responsible to the Information Officer or Fire Boss depending on the type of organization employed. Performs clerical duties in connection with preparation of administrative records involving control of the fire. Compiles all data on resources available for control of the fire.

Should use to the fullest extent possible the records of others but will initiate such action as is necessary to secure a complete file.

Specific duties are:

On fires where no Service Unit is in operation sees that all incoming and outgoing personnel and specialized equipment are registered by the timekeeper. Report information to immediate superior.

Acquaints all personnel as they arrive in camp, of camp routines (reference to bulletin board) and layout of camp.

Prepares all written instructions on the basis of rough draft or verbal instructions of immediate superior.

Prepares shift organization map showing disposition of resources. Cross-references to job instructions and organization charts.

Collects and summarizes records of Communication, Equipment and Supply Officers immediately prior to each planning session.

Currently prepares a chronology of fire action appending copies of maps prepared by the Information Officer showing perimeter of fire and status of control by 12-hour periods.

Prepares a "Summary of the Situation" similar to 10 o'clock report each 12-hour period. This should show correlation between planned and actual accomplishment.

Assembles all regular administrative reports concerning the fires.

Determines personnel and equipment needs for the records unit.

Organizes and supervises subordinate personnel.

Posts map of fire on bulletin board and shows daily progress.

Posts fire organization charts on bulletin board.

Assists immediate superior in preparing final fire report.

Note: Usually employed on Two Sector and higher stage fire organizations only.

x. Aerial Photo Interpreter

Is skilled in aerial photo interpretation and puts aerial photos to their fullest use in fire control activities. Responsible to the Information Officer and works with the Fire Boss, Plans Chief, and assists General Scout and Records Officer in obtaining information from air-photos, which they might overlook or be unable to interpret themselves. May also perform duties of the General Scout, if qualified.

Duties:

Sees that adequate aerial photos are obtained to cover fire area and area which probably will be burned, based on predictions of Fire Boss or Plans Chief.

If not enough sets of aerial photos available, makes recommendation to immediate superior on number of sets needed and where available.

Obtains as much information as possible from aerial photos to eliminate the necessity of much ground scouting. Obtains, records, and maps such information as:

Cover type, fuel density and hazards such as snag and slash areas.

Improvements threatened, or in the path of the fire, such as buildings, power and telephone lines and bridges.

Location of natural barriers such as, rock slides, streams and bare areas which might be used as control lines.

Location of ridges or other likely control lines, showing steepness of slope, cover, soil conditions, indicating whether there are barriers to tractors such as steep slopes and rocks.

Location of canyons and ravines possible for control lines or indicate if canyons or ravines are too steep or narrow to be used for control lines.

Location of features not shown on available maps, such as trails, roads, streams, springs, reservoirs.

Location of possible camp sites, aerial drop areas, helicopter landing spots.

Easiest possible routes or safety areas for crews.

Location of secondary control line and backfire lines.

In absence of General Scout accurately plots location of fire edge, spot fires and unburned islands from the air. If planes are not available, scouts and plots from the ground.

Assists Records Officer in preparing simple maps from aerial photos for use on the fire.

Aids in briefing line personnel on cross country routes to their part of the line, especially when existing maps are in error.

After fire is over, may be able to assist in making damage appraisal estimates, such as burned area - burned timber, brush, grass and woodland.

Note: Employ only as urgently needed.

y. Fire Safety Officer

A Safety Officer is usually employed on all Multiple Division and fires requiring a large fire organization. The need for a Safety Officer on less complex fires will depend upon the experience of personnel used and hazardous conditions involved such as rough terrain, snag area, etc. Ordinarily, the Fire Safety Officer should be a responsible forest officer from the home forest, appointed by the Forest Supervisor of the Forest on which the fire occurs. He will be responsible directly to the Fire Boss. He must have fire experience and a thorough knowledge of fire safety hazards and how they are removed.

The Safety Officer shall keep the Fire Boss currently informed of any action needed to prevent accidents. He is essentially a safety inspector and investigator. He is expected to give safety advice to everybody in the fire organization. The Safety Officer should at all times appreciate the Fire Boss' responsibility with respect to the suppression of the fire and as a Safety Officer he should direct the safety work in such a manner that his actions contribute rather than slow down suppression action.

Some of his most important duties are:

Surveys major hazards in connection with fire line, fire camp, transportation of men, and other fire activities and makes recommendations on how to remove or reduce the hazards.

Checks and reports on availability of facilities to handle minor injuries, and arrangements to take care of serious cases (doctors, ambulances, hospital rescue services, Red Cross Disaster units).

Checks and reports on compliance with Forest Service Safety Code, and use of preventive equipment such as safety guards and hard hats.

Checks and reports on laborers physically unfit for their jobs.

Checks and reports on welfare, sanitation, and safe drinking water conditions. Checks on kitchen personnel, conditions, food, etc.

Checks accident reports and investigates and reports upon serious cases.

Arranges for emergency first aid as necessary.

On fires of several days' duration maintains safety bulletin board and distributes safety materials.

Provides safety advice in strategy planning.

Organizes when possible and aids and advises with overhead in on-the-ground safety training.

This position does not relieve the Service Chief or Camp Boss of the responsibility for having adequate first aid facilities in camps and on the line, operating first aid stations for treatment of minor injuries, arranging for treatment of more serious cases by regular physician, preparing necessary forms, etc. Neither does the position undercut or affect in any way the safety authority and responsibility of any line officer. Such line officers should freely confer with the Safety Officer on special problems that might arise.

One important function of the Safety Officer, as well as all Forest Officers, is to foster the right attitudes about fire fighting. Fires can be dangerous and Forest Officers must respect the aggravated hazards in fire control. The Fire Safety Officer as well as other overhead can instill confidence in fire fighters by letting them know that their welfare is the first consideration when laying out the attack plan for the fire operation.

Safety is within our reach and needs only to be practiced to be realized.

Note: Usually employed on Multiple Division and fires requiring a large fire organization.